THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1890.

ARE THE GERMAN SCHWEINE-SEUCHE AND THE "SWINE PLAGUE" OF THE GOVERNMENT OF THE UNITED STATES, IDENTICAL DISEASES?

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ONE of the most valuable and interesting contributions to the literature of the German Schweine-seuche is that of Bleisch and Fiedeler.*

The investigations of these observers appear to have been most carefully made, and every necessary precaution adopted. They extended over fifty-two swine, in an outbreak in which sixty of sixty-three died. According to their statement, the same micro-organism to which the name "Loeffler-Schütz" has been given, was found in every case, of which they say: "While the dispersion of the bacteria in the organs and blood of the inoculated rabbits and hens is in general about equal, these investigations show that in swine they are most numerous in the mucus filling the bronchial tubes which lead to the diseased portions of the lungs, and less numerous in the caseous parts, while equally scarce or wanting in the gray-red hepatized portions as well as in the spleen and liver."

The most interesting and important point regarding these observations is the relation of the lesions in the intestines to epizoötic swine diseases in this country. In the fifty-two hogs examined we do not find intestinal lesions mentioned once; but do meet with such expressions, over and over again, as, "Nothing abnormal in the intestines." On the contrary, pulmonary changes

* "Beitrag zur Kenntniss der Schweine-seuche." *Zeitschrift fur Hygiene* (Koch's), Vol. 5, p. 400, and *Archiv fur wiss. und prac. Thierheilkunde*, Vol. 5, 1889.

varying in degree were present in each case, and formed the essential lesion.

Summing up the results of their microscopical observations, these investigators say that "the skin and sub-cutis showed no changes," which is somewhat contradicted by Schütz and Loeffler's experience, both of whom frequently mention the presence of "enormous œdema." Going on, they say, "In most cases the diseased changes were limited to grayish-red hepatization of the inferior portion of the anterior lobes of the lungs and medullary swelling of the lymph-glands. Further lesions were also present in the middle and inferior lobes; the bronchial tubes always formed the central point of these consolidations. Where the disease had become more progressed the hepatized tissues were more dry and yellowish-red in colour; coseation was present in still older centres. In the other organs, especially the cutis and sub-cutis, liver, kidneys, bladder, and gastro-intestinal canal, no pathological changes were to be seen.

"Our investigations show that we have had to do with an exceedingly infectious disease of the lungs having a chronic course, which can extend to healthy animals without any contact with diseased ones (hence not contagious), and that the infecting element, in almost all cases, finds its way into the infested organism by means of the lungs. In all cases the pathological changes do not extend much beyond the point of invasion. The disease retains, almost invariably, a local character. Especially do we entirely miss any mentionable changes in the spleen and intestines."

The authors also quote Schütz upon this point as follows:

"Schweine-seuche (Swine Plague) is an inflammation of the lungs and pleuræ which is found with necrosis of the diseased portions of the lungs and mild phenomena of infection, little or no swelling of the spleen, slight swelling of the parenchymatous organs, and gastro-intestinal catarrh. When the disease assumes a chronic course caseous conditions of the lungs are produced."

"Caseous changes in the mucosa of the stomach and intestines have not yet been observed."

The desperate attempts which have been made to graft a second "wide-spread epidemic disease" upon the porcine interests of this country, under the name of Swine Plague, which should be a pest, something which sweeps life away, both by the Agricultural Department, and its notorious "Board of Inquiry," as well as by Prof. Welsh, of Johns Hopkins University, Baltimore, and to establish the identity of this hypothetical and totally non-existent "pest" with the "Schweine-seuche," demand some attention here.

As is well known, it has been the writer's endeavour to protect the hog-growers of the country from the absolutely baseless

assertions of their government, and it is appropriate to call attention to the fact that this second "wide-spread epidemic among the hogs in this country," this terrible bureaucratic pest, never made its appearance until the author had made public the results of his earlier investigations in Nebraska. The report in which this second pest is first described is dated 1886, but was not published until 1887.

In a recent letter sent to the agricultural press of the country, and in which the Agricultural Department of this country cries "baby," it is claimed that the work of that department has been honest and scientific. If it has, then, why cry for support? In that report of 1886, this second terrible pest is described as a pulmonary trouble pure and simple. In the next report, of 1887 (issued 1888), we cannot tell what it is, for though honest and scientific in its work, the government so mixes up things that no human being can tell what this pest really is. We are told that "the lung lesions point to the existence of Swine Plague, and that the intestinal lesions indicate that of Hog Cholera," also in the same pig; that this pest is an "infectious Pneumonia;" of "the difficulties attending investigations of diseases which have their seat in the lungs," though the government does say that "in none of these experiments was the disease reproduced," and then it says, when speaking of its correct "diagnosis," "The disease just described cannot fail to be recognized, as it seems to be the only severe disease of the lungs among swine of which we have any knowledge."

Now, when we read all those quotations, and compare them with the statements of the essential lesion of the German "Schweine-seuche," and when we read that the government claims the germ of its second "wide-spread plague" is identical with that of the German disease, it does certainly look as if the government work has been honest and scientific; even more so, in fact, than when it carelessly claimed of its non-existing micrococcus of 1880 to 1885, that "the evidence furnished is all that should be necessary to decide a scientific question of this kind." But as then, so now, the work of the government is not and has not been either careful or scientific, if we can believe a single one of its assertions, for though it did give "evidence which should decide a scientific question of this kind," although it does seem to show in what we have quoted that the German and government plagues are really and truly pulmonary in character, and nothing else, still they make other equally honest and scientific assertions which, if the German evidence of Professors Loeffler and Schütz, and these two late observers, can be taken to be correct, must certainly force any honest man to see that the government's assertion as to its "Swine Plague" being an "infectious Pneumonia,"

and identical with the German disease, is neither careful nor scientific; for, in that same report of 1887, these honest (?) observers tell us of intestinal lesions! "In the severe types of this disease there are very extensive lesions of the large intestines." And a government observer did say, in April, 1888, that some investigators think that the bowel lesions of Hog Cholera and the lung lesions of infectious Pneumonia are caused by the same germ.

Do such assertions look like true, honest, and scientific statements? Can any ordinary layman see any signs of identity between a disease in which "there are very severe lesions in the large intestine," and this German disease, in which there was not a single disturbance in the intestines in a single one of fifty-two hogs most carefully examined, as well as in those studied with perhaps still greater exactness by both Professors Schütz and Loeffler.

I am perfectly well aware that lesions similar to those found in the large intestine have also been found in hogs in Germany, but think they require an entirely different interpretation. These intestinal lesions were first described by Roloff in 1875, under the name of "Chronic Caseous Enteritis in Swine"; and it is a very singular fact that from that time until now not one single case of such lesions in swine has been described by German observers. Professor Schütz was inclined to the opinion that these so-called "characteristic lesions" in the large intestine, so common in, but not necessary, to the true American Swine Plague, might also be found to belong in the pathological picture of the German Schweine-seuche, and in my earlier writings in several periodicals, I inclined to the same opinion, being misled by the more or less close resemblance in the description of the germs of the German disease to the morphological appearances of those of the American. I, however, entirely changed my opinion as to identity between the German Schweine-seuche and the true Swine Plague of this country, called by the Government "Hog Cholera," in my full report published in the spring of 1889. Notwithstanding this latest and only real authentic publication of my ideas on this subject, a late writer, Prof. Welsh, of the Johns Hopkins University, says, in a "Bulletin" of that institution, December, 1889: "Much confusion has resulted from Dr. Billings' attempts to identify this organism (of 'Hog Cholera') with that of the Schweine-seuche."

I pronounce that assertion to be unequivocally false. The "confusion" has been raised entirely by careless, unqualified, or ignorant writers who have endeavoured to prove that the government Swine Plague is identical with the "Schweine-seuche."

To show how prejudiced and biased this committee may be, and

how weak a man can be, though honoured with a responsible position in a respectable university, and how economical of the truth such a person may be, I quote a few lines from my report on Swine Plague, where I am endeavouring to show that the German Schweine-seuche cannot be identical with the real American Swine Plague, but is really nothing more or less than the "Wild-seuche," a disease differentiated by Bollinger from Anthrax by the absence of *B. anthracis*, though he did not discover its germ, the microscopes and methods of investigation not being equal to that task at the time.

I said that the Schweine-seuche was not the Swine Plague ("Hog Cholera") because, first, enormous œdema and deformation of the body thereby does not occur in Swine Plague; second, because the tendency to hæmorrhagic effusions is not a constant phenomenon, though frequently present, but seldom to such an extended degree as in the German disease; third, because the so-called "characteristic" intestinal lesions seem to be entirely absent.

Hence it seems to me that my conclusion is correct, that the organism discovered by Loeffler in swine, and the disease resulting from its action, has no important relation whatever to the origin and nature of the cosmopolitan Swine Plague.

It seems to me that the above language is plain enough to be understood by anybody.

That even foreigners can read the English language more correctly than one native to a country where it is spoken, I quote from the *Jahresbericht über pathogenen Microorganismen*, 1889, p. 130, where the reviewer of my work says: "While in a previous work I had the opinion that the American Swine Plague and the German Schweine-seuche were identical diseases, in this book (my Swine Plague) I most emphatically contradict this opinion, and claim the Schweine-seuche to be identical with the Wild-seuche," which latter assertion the reviewer questions.

Having thus most completely disposed of the careless inaccuracies of my critics, I will say that I am still of the same opinion, and it remains for German observers to show that I am not correct.

It will be remembered that the observations of Bleisch and Fiedeler extended over fifty-two diseased swine, not one of which presented anything abnormal in the intestinal canal. I will not take the trouble to refer to the exact number of swine examined by Loeffler and Schütz, but it was about ten.

Now I make bold to say, and do it with an experience extending over 1,500 swine, on every one of which careful autopsies were made, that no man can examine not sixty but ten swine in this country in a large outbreak, where a pestiferous disease is raging and the loss anywhere from thirty to seventy per cent., and

not find a majority of the cases presenting some form of a caseous, ulcerative, or follicular lesion in the large intestines.

This should be evidence enough that the two diseases are not identical.

This Baltimore authority (who, by the way, is an almost entirely unknown quantity in the annals of bacteriology, for which assertion I refer the reader to the Annual Report previously quoted), and the scientific Department of Agriculture of this country, as well the members of the celebrated "Board of Inquiry," have, as is well known, done their utmost to injure the swine interest of the west by publishing to the world that the Government Swine Plague is identical with the German Schweine-seuche. It has been shown that had the government stuck to its original text, that its Swine Plague was a Pneumonia only, it had all the evidence on its side. But it has also been shown that the government did not stick to its text, that its assertions have been neither accurate nor scientific, and that in its Swine Plague there were to be found fully as severe intestinal lesions as in the real Hog Cholera, and the Board of Inquiry even went so far as to endorse this view. It even asserted that both the germs of the goverment pest and the Hog Cholera produce almost identically the same lesions (I cannot see where they differ), and they both can be in one and the same hog at one and the same time.

Poor piggy!

Compare this latter statement with all the examinations of German observers.

Can we find anywhere a particle of evidence in favour of any such peculiar condition of things?

Thus far we have been unable to find any evidence of but one disease and one form of micro-organismal etiological life, and all the evidence goes to show that pulmonary lesions are its specific complication, while intestinal are conspicuous by their absolute absence.

Nowhere do we find any description of any such organism as the Hog Cholera germ being mixed up with the Schweine-seuche bacterium.

There is, however, another side to this question, and as I am not writing as an advocate, but as an honest searcher for the truth, it is but right to present it here. It has been previously mentioned that Roloff described intestinal lesions the exact counterpart of those frequently met with in the true American Swine Plague, and that Schütz, in 1886, thought that they might belong to the Schweine-seuche.

It is also known that Schütz looked upon the "Schweine-pest" of Denmark as identical with the English "Swine Fever," and our true Swine Plague or Hog Cholera, and that he did not think it

identical with the Schweine-seuche; also, that he did think intestinal lesions its chief characteristic in contradistinction to the pathognomonic pulmonary lesions of the Schweine-seuche, is evident when he says the "*Schweine-pest* is a disease of the digestive tract, by which especially the cæcum and colon are implicated."—B. & F., l. c., p. 434.

This certainly should go to show that Schütz had no actual knowledge of any swine disease in Germany with marked intestinal lesions up to the date of publication, July 3, 1889, or else those authors would have known of it, except the historical description of Roloft's in 1875.

Since B. and F.'s contribution, however—in fact, very recently, there have been published in Germany* some observations which again describe the presence of the lesions observed by Roloff in a most exact manner, and, singular to say, with scarcely any mention of pulmonary complications being present.

From the title selected by Peters, "Schweine-seuche," and from the entire context, it is very evident that he came to the same conclusion which I did on first reading Schütz's descriptions, for he quotes Schütz on this subject as follows: "In anticipation of the future, I will draw attention to a disease of swine described by Roloft, under the name of Caseous Enteritis, which most probably should be recognised among the pathological processes caused by the ovoid bacteria" of Schweine-seuche. Peters seems to be well aware of the fact that Schütz did not meet with the lesions in any of the hogs he examined, for he says: "We distinguish two etiologically different diseases, the Rothlauf of swine and the Schweine-seuche: the first is pure septicæmia, caused by a bacillus, the last a general disease caused by an ovoid bacterium, in the course of which, so far as known, a multiple mortifying Pneumonia is developed. The anatomical picture of such a Pneumonia was at least presented by all the swine examined by Prof. Schütz."

The work of Bleisch and Fiedeler seems to have been unknown to Peters. Aside, then, from the before-mentioned reference to Roloff's observations in 1875, it is evident that the German investigators acknowledge but two specific swine diseases in that country, and while I do not desire to be a special pleader for my own hypothesis as to the conditions there, still it is only fair to call attention to a peculiar result of the appearance of the Loeffler-Schütz Schweine-seuche in the pathological arena, and that is, we hear no more of the "Wild-seuche." As previously noted, Peters follows Schütz implicitly, and assumes the latter's hypothesis as to the Roloff lesions in the intestines to be unqualifiedly correct,

* "Die Schweine-Seuche." Peters. *Archiv fur wissen. und pract. Thierheilkunde.* Berlin, 1890.

and says, "for the correctness of the assumption that the Caseous Enteritis should be classed with the Schweine-seuche, I am in a position to furnish the necessary material.

"The necroscopies which I have made upon such swine did not all give a corresponding result, on the contrary, the bacterial results were the same in every case, namely, the presence of ovoid bacteria. In four of the cadavers the pathological changes were exclusively in the large intestine, in one other alone, besides these, there was a multiple necrotic Pneumonia."

It is not necsssary to quote the details of the microscopical examination of these five hogs, of the results of which Peters says: "Through the previous examinations it can well be considered as proven that all the swine examined had suffered from one and the same disease which was caused by the Schweine-seuche bacteria. We may also conclude that the multiple inflammation of the lungs, which was exceptionally and only present in the cases investigated by Schütz, is not an integral element of the pathological picture of Schweine-seuche, and that the hypothesis of that observer has been proven. Inflammation of the lungs occurs in this pest, as it presents itself here, probably much more frequently than Caseous Enteritis, as in the five cases examined by me it was only present in one, and there as a secondary local infection. To this assertion I find myself the more justified in that at the time I did not know of the identity between the Caseous Enteritis and Schweine-seuche. I had met with the first much the more frequently, without its being complicated with pulmonary lesions."

Let us consider this evidence as unprejudicedly and carefully as we can.

1. What have we in favour of the identity of the disease studied by Peters and that investigated by Loeffler, Schütz, Bleisch, and Fiedeler?

Nothing but that most unreliable of all evidence, the presence of a morphologically (apparently) identical micro-organism.

This kind of evidence is the most misleading and dangerous which can possibly be relied upon.

Let us suppose that it were possible to infect five hogs with the germ of either Texas Fever, as it is called, the Hen Cholera, Rabbit-septicæmia, the Weasel Pest, or the Corn-stalk Disease, all of which are ovoid and belted bacteria, morphologically not safely to be differentiated from those of the Schweine-seuche—what then?

But the germs of the last disease have no movement, and do not grow on potatoes, say some!

Well, what then?

There is no evidence that Peters made any such examination of a culture, as he certainly would have mentioned it.

2. What have we against any such identity between the disease investigated by Peters and the Schweine-seuche?

In the Peters case we have four hogs with no pulmonary lesions whatever in comparison with over sixty examined by the other observers, in none of which was there a single intestinal lesion.

To my mind, this is conclusive evidence that, notwithstanding the apparent resemblance between the micro-organisms, as concluded by Peters, the disease studied by him was the Hog Cholera of this country; and even if we take Schütz's conclusions, not the Schweine-seuche, but the Schweine-pest of Denmark, which is now generally admitted to be the same thing as the pest that decimates our herds.

If any value can be placed upon the testimony from Germany as we now have it before us, it must be admitted that it is still all in favour of my own conclusions as published in my complete report upon Swine Plague in this country; that is, that the Germans are blessed with three distinct Swine Plagues, varying, according to present evidence, in extent as follows:

1st. The Rothlauf, or Rouget (Erysipelas).

2nd. Hog-Cholera, or the Swine Pest, or genuine Swine Plague.

3rd. Schweine-seuche or the Wild-seuche.

While according to present evidence the third is more prevalent than the second of this series, I have placed it last because I desired to quote some peculiar testimony given by Bleisch and Fiedeler.

The Wild-seuche takes its name from the fact that attention was first called to it from its occurring among the wild animals in the Royal preserves, especially deer, which in Germany are called "das Wild." Up to the time of Bollinger's investigations this disease was classed with Anthrax, but as said before, Bollinger did not diseover its germ at that time. Whether or not future investigations will justify my hypothesis (see my report) that this Wild-seuche and the Loeffler-Schütz Schweine-seuche are one and the same disease I know not, but it is positively certain that all the evidence is at present in my favour.

It is very singular how limited the study of this question has been in Germany, since Schütz's first investigations in 1885, notwithstanding the extraordinarily favourable conditions for such work in the veterinary schools and laboratories of that country.

The fact that the Wild-seuche attacks cattle and hogs on the same territory and under the same circumstances is absolute proof that it has no identical connection with our real Swine Plague.

The investigators of the government of the United States assert that its peculiar Swine Plague is identical with the German, and

mainly upon bacteriological resemblances. I freely admit that should Peters' assertions become proven these observers would have a strong case against me, but I place equally strong reliance that they have none upon the previously noted fact that in no other reported investigations in Germany have we mention of intestinal lesions with or without Pneumonia in a single case of the Loeffler-Schütz disease, and also upon Schütz's conclusions upon the Danish Swine Pest and the disease in England.

On the other hand, in all the practical experiences of the past forty years in this country among our farmers we have no record of a single pestiferous disease of a "wide-spread" character attacking cattle and hogs at the same time and under the same conditions.

Have we any such evidence with regard to the German Schweine-seuche?

Although not so exact as could be desired, we have some.

Bleisch and Fiedeler say that "the owner of the stable (in which the hogs they had examined had died of Schweine-seuche) placed fourteen calves therein, and that some of them died, which caused them to investigate whether the disease Schweine-seuche was transmissible to calves.

"In order to prove this they inoculated two calves with a bouillon culture of known virulence, the one subcutaneously with 1 ccm., the other in the right lung with ½ ccm. of the same.

"The first died six hours after the inoculation."—P. 429.

The same micro-organism as those injected was found in all the organs, and controlled in the necessary manner.

The second calf was not seriously affected. Insignificant in extent as this evidence is, it points in support of my hypothesis and assertions.

1st. The identity between the Schweine-seuche and the Wild-seuche.

2nd. The non-existence of the Schweine-seuche in this country.

The case would be strengthened had Bleisch and Fiedeler had opportunity to examine one of the calves reported to have died by the owner, and made the necessary control experiments from the same.

Another point must not be overlooked, and which contradicts the assertion of the Government that the Swine Plague and the German Schweine-seuche are identical, is the immense difference in the results following subcutaneous inoculations of the respective germs directly in the lungs of healthy swine.

The Government admits that "in none of these (its) experiments was the disease reproduced," even though they injected as high as 5 ccms. of a culture "directly into the lungs" (Report, 1887). The German investigators were positively successful

with so small a dose of culture as one-third of a ccm., the animal dying in ten hours, while the Government swine lived "forty-one days" and were killed, having been seriously ill. The Germans also produced the same lesions in their inoculated swine as they found in those infected under natural conditions, and say: "Confirmatory also was the presence of grey-red hepatization in the lungs, which in nothing, not even in the bacteriological results, differed from the natural disease as seen in its earliest stages."—P. 438.

It is but common honesty to admit that the Government investigators do report having finally killed a "hog by the injection of nine cubic centimeters" (!!!) of culture into the lung, but what kind of a germ with any virulence in swine would not kill in such doses as that? Prof. Welsh also reports similar results following the injection of 8 ccms. into the right lung of a pig, of the same germ.

Such experiments as that are more contradictory than confirmatory as to any identity between the Swine Plague of the Government and the German Schweine-seuche. On the other hand, all attempts on the part of the Government investigators to produce the German Schweine-seuche by subcutaneous inoculation have utterly failed. Prof. Welch does not mention any such experiments. On the contrary, we may find some reported by Loeffler and Schütz as to the Schweine-seuche.

First, as to Loeffler, who says on July 5th (year not given) he injected two young swine in the skin of the belly and leg respectively. One of them was dead in the stable on the morning of July 7th (and this by subcutaneous inoculation). Enormous œdema of the skin, lungs, hypostatic, etc. The second swine was not seriously sick.

Schütz injected 2 ccm. of a bouillon culture under the thin cutis of the inside of the hind leg of two young swine on the 26th, at 5 p.m. One died twenty-four hours after the inoculation; the other died exactly forty-eight hours after inoculation.

On the 14th of July Schütz inoculated subcutaneously another hog with 1 ccm. of a bouillon culture. It died on the night of the 16th, about two and one half days.

On the 16th of June, at 11 a.m., Schütz injected 1 ccm. of a bouillon culture into the lung of an old hog. It died on the night of the 18th, about two and one-half days.

Let us compare these results, following the subcutaneous and intrapulmonary injection of the Schweine-seuche germ, with some others reported by the Government were less than 9 ccm. were used.

"Dec. 6th, two pigs, Nos. 43 and 47, were inoculated in the thorax as already described (into the lung, with a hypodermic

syringe having a needle about three inches long), No. 43 receiving 1½ ccm., and No. 47, 3 ccm. No. 47, inoculated Dec. 6th, *killed* Dec. 11th—five days. No. 43, inoculated Dec. 6th, lived to Jan. 23rd—forty-eight days.

There seems to be too vast a degree of difference between this Government germ and that of the German disease, even with the amount injected vastly in favour of the bureaucratic organism, to warrant any very strong claims for identity between the two.

AN ANALYSIS OF THE STAPLE FORAGE GRASS OF INDIA.

BY FRED SMITH, M.R.C.V.S., F.I.C., PROFESSOR, ARMY VETERINARY SCHOOL, ALDERSHOT.

HAVING recently made an analysis of the staple forage grass of India, I have thought that it might interest Indian readers of the Journal to know something of its composition.

The material was kindly sent me by Veterinary Surgeon T. Lewis, A.V.D., stationed at Mhow, and was a specimen of the grass supplied to the horses of N. Battery R.H.A. at that station. The grass was dried before being sent home, and the analysis is calculated on 100 parts of the moisture-free forage.

The grass, known as "Doob" in Bengal and "Hurryali" in Madras, bears a high reputation as a forage plant; both the top grass and roots are used for feeding purposes, the latter often being preferred; though, I believe, the consensus of professional opinion is in favour of the top grass in preference to the roots. My own opinion is that the root material is answerable for many of our cases of Colic, though the hard wire-like stems are not free from blame.

I made a separate examination of the top and root grass as a matter of practical interest. In 100 parts of the moisture-free substance I found the following:—

	Top Grass.	Root Grass.
Albuminoids	8·8453	6·2512
Fats	·8830	·4630
Carbo-hydrates	53·4717	51·8678
Cellulose	23·9000	31·9000
Ash	12·9000	9·5180
	100·0000	100·0000

I was surprised to find the albuminoids so low in the top grass; 100 parts of moisture-free hay will contain about 10·5 per cent. of albuminoids.

The small proportion of flesh-forming matter in the root grass does not surprise me.

The fat is really that portion of the forage extracted with ether; it probably contains but little true fat, and the ether extract is surprisingly small; the root grass is still worse.

The carbo-hydrates are the sugar, starch, gum, and lignin. There is very little of the first three, the lignin or indigestible fibre forms the bulk of this item, and it may appear strange that the root grass contains less of this substance than the top.

The cellulose is the digestible fibre of which the root contains the most.

The ash is the salts existing in the plant, plus the dirt and sand adherent to the grass. The amount of this latter is sometimes enormous due to the method by which the grass is collected, and explains one of the frequent causes of Colic in India. The specimen of top grass contained an unusual quantity of sand, and as the amount of necessity varies, depending upon the time of year and the method of collection, we may safely assume that as a rule it is not more, but even probably less than that found in the ash of the root grass.

I endeavoured to avoid this sand difficulty by rapidly washing the grass before commencing the analysis, but, in spite of my care much remained, though I removed by washing a very considerable quantity. The root grass has come out better than I expected, it has less indigestible fibre and more digestible cellulose than the top grass, but it is poorer in flesh-forming substances and ether extract

As this is the first time, to my knowledge, that doob grass has been analysed, I thought it might interest the members of the Army Veterinary Department serving in India to know its composition.

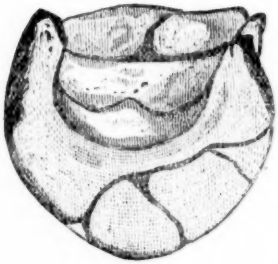
In calculating the nourishment received by horses in India, the needful allowance must be made for the enormous amount of water which this grass contains at certain seasons of the year, which I should say would probably vary from 20 per cent., in hot weather, to 70 per cent. during the rains. The moisture of any specimen can always be readily ascertained by thoroughly drying a weighed portion and weighing it again.

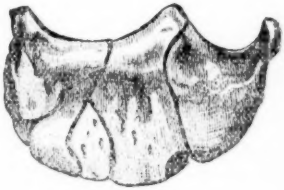
UNIQUE FRACTURE, WITH DISPLACEMENT OF THE OS-PEDIS AND OS-NAVICULAR.

BY J. H. CARTER, F.R.C.V.S., BURNLEY.

I FORWARD a rough sketch of the os-pedis and os-navicular, showing the exact seat of fracture as it actually appears in the original specimen in my possession; and accompanying it a short history of the case, which I trust may be worthy of insertion in the VETERINARY JOURNAL, and prove of interest to its readers.

On the afternoon of September 9th, the animal, a valuable chestnut pony, the property of a tradesman in the town, was being driven by its owner along the main street, when one of the wheels of the conveyance slipped into the channel, and was only with great difficulty extricated from its unpleasant situation, and then the animal slipped, and fell broadside, with one foot across the tram-rails; at the same moment a tram-engine, from immediately in the rear, came up at such speed as to be unable to pull up before it had gone over the foot and taken the hoof clean off, as if by magic. The driver of the conveyance was thrown violently to





the ground, and sustained a compound dislocation of the thumb and fracture of one finger.

I was summoned in all haste to attend to the injuries, and upon my arrival found the animal standing on three legs, the fourth being tied up with a number of strings and rope to prevent undue hæmorrhage, and the foot enveloped in a series of bandages; upon removing these, I found a distinct separation of the hoof from the coronary band.

Upon inquiry, I was informed that the hoof had been taken clean from its natural attachments, picked up from the other side of the street, and replaced in its natural position by being rudely pushed or forced on by one of the bystanders. I at once ordered the animal to be slaughtered, which was promptly done with the pole-axe, by the knacker, who, fortunately, was at the time among the multitude, only awaiting orders. Immediately the animal fell to the ground the hoof flew from its place, and then was revealed extensive fracture, with displacement of the os-pedis.

I secured the foot from the fetlock joint, and it was not until I had had it boiled and the bones cleaned, that I discovered fracture of the os-navicular.

TUBERCULOUS LUNGS AND SPLEEN IN THE HORSE.

BY JAS. COOKE, F.R.C.V.S., SCARBOROUGH.

THE subject of this communication was a bay gelding, aged six years, belonging to William Hardcastle, Esq., of Bingley, Yorks., from whom I received the following history.

About eighteen months ago the animal had a slight Influenza, and since that time has appeared unthrifty, and more or less dejected when standing in the stable; or even when standing after exercise the animal was noticed to have a haggard appearance, but regained its usual spirits after it got warmed up to its work.

In March last it was found to be ailing, and it was noticed that it stood in a peculiar manner, and had a difficulty in getting its head to the ground when in the act of eating or drinking. It was then under treatment for indigestion. Some six weeks afterwards it was driven over to Scarborough, a distance of about seventy miles, and appeared fairly healthy for a few weeks after its arrival, when it was noticed to be losing flesh and not doing well. It was again put under treatment; several professional opinions were given in the meantime, most of them agreeing that the animal's brain or spine was affected. On the 15th July I was asked to see the horse, and after making arrangements with the V.S. who had the case in hand, I made an examination, and found the following symptoms:—

General appearance dejected; condition poor; lethargy; slight stiffness in walking or turning round; appetite good; bowels and kidneys acting regularly, although a few weeks previously the animal had Diuresis; nothing abnormal to be found in the throat or rectum; pulse 60; m.m. pallid; temp. 101°; slight cough, with a little discharge from the nostrils. On auscultating and percussing the chest, I found a mucous râle in the bronchial tubes, the lower half of the right lung consolidated, the upper part of it being similar to the left lung, with circumscribed patches of consolidation over the whole surface. I may mention that the animal regularly lay in a natural position on both sides of the chest. A very peculiar symptom was the singular manner in which the horse comported itself when the head was lowered during the act of eating or drinking. The nose was poked out and the neck appeared rigid, the fore limbs being placed as widely apart as they possibly could be; one fore limb was pushed out beyond the animal's nose, and the hind limbs were straddled out in a similar way. While standing, it seemed to ease the throat by keeping the fore limbs apart, or placing one of them in advance of the other. This peculiar, crab-like position of the limbs I attributed to pneumo-gastric nervous irritation.

Diagnosis: Chronic Broncho-pneumonia, with enlarged spleen. Prognosis: Death.

The animal being a great favourite of the owner, he requested me to prescribe for it. I then recommended cod-liver-oil, with mineral and vegetable tonics, combined with iodide of potassium. I occasionally called to see it, but I found no difference in the symptoms, except that the mucous membrane had lost much of its pallidity, and was now slightly reddened. On August 5th I again visited the animal, in company with the owner, and I recommended it to be immediately destroyed, as the emaciation had become greater, and the points of the limbs were swollen, also the prepuce; the breath was fœtid, pulse increased to 72, and the respirations 36. The fore limbs were alternately rested, and the animal grunted a little in turning round. Consequently it was walked to the knackers, a distance of a quarter of a mile, and destroyed on the 6th August.

On visiting the slaughterer's yard, I was informed that there was some difficulty in separating the skin from the muscles of the back, it having become firmly united to them, but there did not appear to be any spinal injury.

On opening the abdomen, the bowels were noticed to be exceedingly pale, but otherwise healthy. The spleen was very much diseased and abnormally enlarged, weighing sixteen pounds, and was attached to the ribs and diaphragm; the kidneys and liver were pale in colour; the lungs were studden over their whole surface with tuberculous deposits; the lower half of the right lung being consolidated; nothing abnormal was detected in the heart or brain. A section of the lungs, liver, spleen, heart, and kidneys were sent to Prof. McFadyean, who kindly reported that he had examined the specimens microscopically, and ascertained beyond any doubt that the lesions were tubercular; the bacilli were enormously abundant. The probability of this animal becoming infected through contact with cows is not at all unlikely, as it was stabled for some time in the same shed with eight cows, about two years before its death.

ULCERATIVE STOMATITIS IN GOATS.

BY J. A. NUNN, F.R.C.V.S., A.V.D., PRINCIPAL, LAHORE VETERINARY SCHOOL.

An outbreak of this disease came under my notice amongst the commissariat goats that were sent for food from Chittagong, during the recent Chin-Lushai expedition, and in the very scanty professional library I have at my disposal I can find no mention of either sheep or goats being affected with it; indeed, from

what I gather it is exceedingly rare, even amongst equines in England. The only notice I can find of it amongst the domestic animals is an account of an outbreak amongst horses in Berlin in Williams' "Veterinary Medicine," page 252.*

The goats in question were purchased in Chittagong, where they were passed by a committee of military officers as healthy, but were not seen by a veterinary surgeon. They were then sent up the Karnafullie River to Demageri in boats—ten days' journey —101 arriving out of 219 that started. The outbreak was at first supposed by the commissariat authorities, to be one of Foot-and-mouth Disease, but the differences were most marked. There was an entire absence of the vesicles formed on the mucous membrane of the mouth in this latter disease, the eruption commencing by the formation of hard indurated nodules in the substance of the buccal membrane, at first about the size of a millet seed and increasing to about that of a small pea, with a thickened whitish membrane over it, which had a curious dirty-grey appearance where the buccal membrane was black, but on the portions where pigment was absent the characteristic white colour could be plainly seen. The membrane, where it sloughed, or was rubbed off, left a shallow red ulcer behind it of a circular shape. The eruption was altogether confined to the interior of the mouth, tongue, cheeks, and dental pad. I saw none on the nostrils or other parts of the body, neither in any single case on the feet, although I looked carefully when the outbreak was first stated to be Foot-and-mouth Disease. Three cases presented all the appearances of "Cancerum oris"; the cheeks, from the angle of the mouth for two inches backwards, having completely sloughed through, leaving the necks of the molar teeth and gums exposed. Whether this was really the case, or only the result of the ulcers becoming irritated by the hard bamboo leaves, "the only food these goats got," and then becoming fly-blown and gangrenous, I cannot say, as I did not see them from the commencement of the attack, so as to ascertain if the primary livid patch was present or not; but the result was precisely what would be seen in a very aggravated case. Against this, however, is the fact that Cancerum oris is usually only seen in young delicate children, whereas these goats were adults, and presumably in a healthy state when they left Chittagong.

Perhaps some of the readers of the VETERINARY JOURNAL may be able, through the medium of its pages, to inform me if there is any literature on the subject, besides that quoted in Williams' "Veterinary Medicine."

* This was really a case of Horse-pox, though described by another name.—ED. *V. J.*

RABIES IN A PIG: SPONTANEOUS RECOVERY.

BY PROFESSOR PEUCH, TOULOUSE VETERINARY SCHOOL.

On October 26th, 1889, there was brought to the Toulouse Veterinary School a three-years-old sow, which, on the previous evening, when returning from the fair of Gragnague (where it could not be sold), was seized with a fit of fury on its mistress attempting to make it go by another road. It ran off across country, and overthrew and bit a man who tried to stop it. Continuing its course, it rushed into a village and ensconced itself in a dark place behind a wall, where, by its growls, it threatened everyone who approached it, until at last it was secured with ropes and placed in a cart. Here I saw it afterwards.

The pig persisted in lying, and appeared to be indifferent to everything around it—neither shouts nor the coming or going of those who were attracted by its arrival, made any impression upon it. It lay plunged in such a state of torpor, and was so feeble that it made no attempt to bite; it had to be dragged from the carriage on a plank in order to get it into a stable. Here it raised itself on its fore legs, and eventually got up altogether; but as it walked it staggered, and it soon lay down again. The respiration was embarrassed and noisy, for the face was much swollen and deformed by the blows it had received. The animal refused all food; the sight of water did not affect it, neither did the presence of a dog.

On October 27th, the debility remarked on the previous evening was still more marked; in vain the pig attempted to rise, though it managed to sit on its hind quarters like a dog. It was not aggressive when a dog was shown to it, and remained indifferent when a white sheet was shaken; although at times it opened and closed its mouth as if desirous to bite. But it remained lying and did nothing more than emit some deep growls when burned on the back, hind feet, or belly, with some inflammable stuff tied at the end of a stick. Nevertheless, the noise made on stamping the foot on the ground or on loudly clapping the hands, caused a certain amount of excitement, betrayed by convulsive movements of the jaws.

On October 28th, the sow attempted to rise, but it could not move its hind quarters; bran and flour gruel was placed before it, and at times it sucked up a small quantity, but it could not swallow. From October 29th to November 2nd the animal's condition began to improve; the weakness of the posterior extremities became less marked, and deglutition was not so difficult; the convulsive movements of the jaws still persisted, however. On the following days the amelioration became gradually

more accentuated, until at last, on November 7th, the sow was considered cured.

Was the animal affected with Rabies? The history and the clinical evolution of the disease led us to answer this question in the affirmative, for it seemed rational to attribute to Rabies the paresis of the hind quarters, the analgesia, dysphagia, and the convulsive movements of the jaws we observed. But it might be objected that the state of calmness of the animal—at least since its sequestration—the absence of excitability when a dog or white object was exhibited, as well as the absence of aggressiveness towards man and animals, were adverse to the idea of Rabies. In order to settle the point, we submitted the sow to a control inoculation, in injecting into the anterior chamber of its eye a pure emulsion of the medulla oblongata of a rabid rabbit.* The operation was performed on January 5th, 1890, seventy-two days after the manifestation of the first signs of the supposed attack of Rabies. At the same time, and with the same emulsion, two dogs, two rabbits, and two guinea-pigs were inoculated as test animals. Of these six animals three died of Rabies—a rabbit on January 21st, a dog on January 27th, and a guinea-pig on January 28th. The sow and the three other test animals resisted this primary inoculation.

On February 11th, 1890, these four animals were again inoculated with an emulsion prepared by mixing with sterilised water the medulla oblongata of a cow which had died from furious Rabies. The inoculation was intra-ocular, and was practised not only on the four animals mentioned, but also on four others—a dog, two rabbits, and a guinea-pig. All these latter died of Rabies—the dog on February 25th, the two rabbits on February 25th and 26th, the guinea-pig on March 6th. Of the three test animals of the first inoculation, two now died of Rabies—a rabbit on March 1st and a guinea-pig on the 15th of the same month; a dog resisted the inoculation, as well as the pig which was alive and well on the 29th of March.

Of the ten animals alluded to here—three dogs, four rabbits, three guinea-pigs—nine died rabid, while the pig, inoculated in the same manner, and with the same virulent material, was not affected. Though one of the test animals of the ten was not attacked by Rabies after two inoculations, there can be no doubt as to the virulence of the inoculated products. From this we may conclude that the pig showed the symptoms of Rabies, and that

* This rabbit had been inoculated with the medulla oblongata of another one, which had itself been inoculated with a virus of the second degree. The original virus had been furnished by a dog which was destroyed as rabid.

this primary attack conferred immunity upon it; and the case establishes the fact, supported, as it is, by experimental proof, that the pig may recover from Rabies. But this termination is evidently exceptional, and does not invalidate the rule that the disease ends in death. Nevertheless, it appears to us useful to record this case, by reason of the control experiments of which it was the object.

SCROTAL HERNIA.

BY CAPTAIN B. RUSSELL, F.R.C.V.S., GRANTHAM.

THE ordinary "covered operation," as performed on horses that have attained four years old and upwards, in my experience is very risky, and often attended by most untoward results. I operate upon six to twelve such animals every year, and have used all sorts of wooden and metal clams, but not with the satisfaction I had been led to expect; that bane to the skill of the surgeon, "Tetanus," being, perhaps, our greatest enemy; but in some cases, notwithstanding every care and precaution, after the removal of the clam, the bowels will protrude in the course of an hour or two.

Messrs. Arnold and Sons have recently constructed a steel clam for me, which I am hopeful will obviate all bad results.

After having cast the horse, and returned the bowels within the abdomen, I place above the testicle this long steel clam (which is made of selected metal, properly tempered, so that it will not

bend or snap, well tapered on its edges, so as to be as light as is consistent with strength; extra long, that it may be easy to get at; and with all screws guarded, so as to prevent any possibility of wounding the thighs; including within its grasp the common integument of the scrotum, the cord and the appendages of the testicle. This I tighten up every twenty-four hours, if at all loose, without casting the animal, and in about seven days the whole drops off, leaving a firm cicatrising surface, from which hitherto I have had nothing to fear. I keep the animal standing from the time of the operation until four days after the parts fall off, allowing sufficient exercise daily to control the swelling. I hope the instrument may prove of service to the profession.

Editorial.

THE EXISTENCE OF CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES OF AMERICA.

THAT the contagious Pleuro-pneumonia of cattle exists in the United States, is evident from the condition of some of the animals imported into this country from across the Atlantic, from the reports of professional journals published in that country, and also from the official report issued by the United States Department of Agriculture. That the malady is also prevalent in a number of centres, is no less evident from the information derived from these sources. An attempt to introduce live stock, unless for immediate slaughter, from any country in which this most serious of all animal scourges exists, should be resisted at all hazards at the present time, when we are making such strenuous efforts, at such a heavy cost, to free these islands from it; and our determination to keep out fresh instalments of infection cannot surely be regarded as anything but laudable by other countries, no matter though their cattle traffic may be impeded thereby. It would be nothing less than the height of folly—and we have already suffered terribly through our folly, stupidity, and supineness in dealing with this scourge —to allow store cattle to come among our herds, from regions in which "Pleuro" exists, even though assured they were not drawn from infected districts. We are only too painfully aware of the value of such assurances in our dealings with Ireland; and the cattle trade is pretty much the same all the world over. Inspection at the port of embarkation, and even at the port of debarkation, is of very little, if any value, when we consider how occult the malady is, and that an animal apparently in good health may yet be so diseased as to be a bearer and active disseminator of infection. No contagious malady of animals is so difficult to detect or to diagnose, and though the affection may be in the lungs *perdus*, so far as human agency can discern, yet for months it may be transmissible in this condition, and taint every healthy bovine brought near it.

It must therefore necessarily be a long time before a country in which the malady prevails in various centres, and in which there is movement of stock, can be declared free, even under the most severe and active sanitary measures, such as we are now trying to enforce (though it is to be feared they are not severe enough). It is to be hoped, therefore, that no cattle from infected countries shall now, or for the future, be allowed to go beyond our port abattoirs until these countries have been, on reliable authority, declared entirely free from the malady for twelve months. If their cattle trade with the United Kingdom is worth maintaining, this will be a strong inducement for them to exert themselves in securing a clean bill of health as quickly as possible. Traffic in cattle may be beneficial to nations, traffic in contagion cannot be.

GLANDERS IN THE UNITED STATES OF AMERICA.*

In addition to the order of the Commissioners of the District of Columbia, by which the Chief of the Bureau of Animal Industry was made district veterinarian for the purpose of discovering and eradicating Pleuro-pneumonia, a subsequent order has been issued which gives him authority to investigate as to the existence of Glanders, and to kill affected animals without compensation to the owne.. The full text of this order is as follows:—

OFFICE OF THE COMMISSIONERS DISTRICT OF COLUMBIA,
Washington, August 21, 1888.

Regulation for the Suppression and Prevention of Contagious, Infectious, and Communicable Diseases affecting Domestic Animals in the District of Columbia.

Whereas the eighth section of the act of Congress approved May 29, 1884, entitled "An act for the establishment of a Bureau of Animal Industry, to prevent the exportation of diseased cattle, and to provide the means for the suppression and extirpation of Pleuro-pneumonia and other contagious diseases among domestic animals," authorises and requires the Commissioners to take measures for the prompt suppression of all contagious, infectious, and communicable diseases affecting domestic animals in the District of Columbia, to prescribe regulations for disinfection, and such other regulations as they may deem necessary to prevent infection and contagion, as provided in said section, do ordain, declare, and publish the following:

Ordered, That all persons having the care or custody of any domestic animal in the District of Columbia affected or supposed to be affected with any infectious, contagious, or communicable disease, shall isolate and forthwith report the same to the Chief of the Bureau of Animal Industry of the Department of Agriculture, or to some officer of said Bureau in said district, designating the place where the same may be found, and shall place the same at his disposal, and observe and follow such directions as such chief or officer shall prescribe in such case.

2. That it is hereby made the duty of all veterinary surgeons in said district, and sanitary inspectors of the health department of the district, and of every member of the metropolitan police force to inquire and report upon all known or suspected cases referred to in section one of this order.

3. That if any person or persons having the care or custody of any domestic animal in said district affected or supposed to be affected as aforesaid, shall secrete or conceal the same, or use any device to conceal the same or mislead the persons or officers who are charged with any duty in reference to such domestic animals, and all persons aiding therein, shall each suffer the penalty hereinafter prescribed.

4. That the Chief of the Bureau of Animal Industry only may cause the death of any so diseased or supposed to be diseased animal in said district upon orders oral or written from him for the death of such animal, and shall also prescribe the mode and place of death, which shall be strictly pursued in the destruction of said animal; and the bodies of such animals so killed shall be removed by the health officer of the district upon notice from said Chief.

5. That every person who shall violate any of the provisions of this regulation shall be fined in any sum not less than ten nor more than twenty-five dollars for each offence, to be enforced in the police court of the District of Columbia, in the name of the District, on information, etc.

* From the Annual Reports of the Bureau of Animal Industry for 1887 and 1888.

Official copy furnished the Chief of the Bureau of Animal Industry, Department of Agriculture.

By order: W. TINDALL, *Secretary.*

The investigations so far made show the prevalence of this malady to a considerable extent among the horses in the district. From here affected animals have been frequently taken into Maryland and Virginia, scattering the disease and causing severe losses in those States. The presence of such a pest, dangerous not only to the equine race but equally fatal to mankind, calls for energetic measures of suppression. To this end prompt action has been taken whenever the disease has been discovered, and affected animals have been killed as soon as possible after a satisfactory diagnosis was reached. At the same time great care has been exercised that no animals should be condemned unless they presented the pathognomonic evidences of the affection. When practicable a *post-mortem* examination is always made to confirm the *ante-mortem* diagnosis. The number of horses killed in the District of Columbia because affected with Glanders was—July, 1; August, 0; September, 2; October, 10; November, 1; December, 12; total, 26.

THE ETIOLOGY AND DIAGNOSIS OF GLANDERS.

Glanders is a contagious disease of importance, both from an economical and sanitary stand-point. It is not only communicated from one horse to another, but it is occasionally transmitted to man, producing a severe and generally fatal disease.

The consensus of opinion and of legislation to-day demands the slaughter of animals affected with Glanders. Recovery of horses affected with this disease is perhaps never complete. In the great majority of cases it runs a course of variable length, the final result of which is death preceded by emaciation and general debility. Nor is there any remedy or cure for the disease. Granted even the possibility of recovery, the affected animal is in the meantime a source of continual danger to other horses and to human beings. It is therefore in the end economy to immediately destroy glandered horses when detected, even were human life not endangered by their presence.

But the diagnosis of Glanders is not always an easy matter. It may be confounded with a number of other diseases, and when a very valuable animal is involved an accurate diagnosis is of great importance. Since the discovery of the bacillus of Glanders in 1882 considerable attention has been paid to the matter of diagnosis, and we are in a position to-day to present a few valuable facts in this connection. In the following pages some space will be devoted to the consideration of the causation or etiology of the disease, with special reference to the specific bacillus and its biology, a brief account of experiments made both in our own laboratory and elsewhere to facilitate diagnosis.

Etiology.

The communicable nature of the disease among horses known as Glanders and Farcy is now thoroughly established by experiments, which have revealed its cause as a micro-organism belonging to the group of bacilli. These experiments date from the year 1882. The contagious character was, however, recognised long before this time, and various experimenters had succeeded in producing the disease in horses and other animals by inoculating with the nasal discharges and other pathological products of the disease. In Germany the real character of Glanders was recognised as far back as the first quarter of the present century. In France, however, there was a strong opposition to those who held Glanders to be a communicable disease, which opposition was not overcome until about thirty years ago.

Various efforts had been made in the last forty years to discover the actual cause of the disease, either in the blood of the affected animal or in the specific lesions of the air-passages and the skin. The alleged discoveries in most cases were far from the truth, and at times sensational and absurd. Thus Hallier, in 1868, claimed to have found the same organism in Glanders which he regarded as the cause of Syphilis in man. The doctrine that Syphilis originated in Glanders had been promulgated before this, and was now seemingly confirmed by Hallier's fantastic inferences. In 1882 Roszahegyi described organisms which he found in the pustules of a man who had succumbed to acute Glanders. His description warrants the belief that he was the first to see the bacilli of Glanders. He did not go far enough, however, and failed to show any causal relation between these organisms and the disease. In 1882, Löffler and Schütz published the first positive results obtained in isolating the bacillus of Glanders, which have been confirmed by a number of observers subsequently. Meanwhile work had been going on in France in the same direction. Bouchard, Capitan, and Charrin published in 1883 the results of cultivation and inoculation experiments dating back to 1881, which they claimed as decisive in demonstrating the microbe of the disease. A careful perusal of Bouley's note to the Academy of Medicine in 1883 (*Bull. Acad. Médecine*, 1883, p. 1,239) will, however, convince any unbiased reader that the methods which they employed (in one case they made cultures from a nasal ulcer in bouillon, in another from a spleen tubercle in bouillon) are either unsafe or insufficient in bringing about any positive results as to the true nature of the specific microbe. We must, therefore, accord to Löffler and Schütz the credit of being the first to have demonstrated in a satisfactory manner the presence of a certain microbe in glandered horses and its capacity of producing the disease in healthy horses. A brief *résumé* of their work* will serve at the same time as a description of the bacillus as they found it in the lesions and in cultures, and as an introduction to the work done on the same subject in the laboratory of the Bureau.

The authors found considerable difficulty in demonstrating the presence of Glanders bacilli in sections of nodules in the spleen and liver of glandered horses, owing to the fact that most of the staining agents failed to colour them. Finally, the following solution was made, which now goes under the name of Löffler's stain: 30 cubic centimeters of a concentrated alcoholic solution of methylene blue was added to 100 cubic centimeters of 0·1 per cent. potassium hydrate. When sections were placed in this deep-blue liquid for about five minutes, tranferred to a 1 per cent. solution of acetic acid for a few seconds, then dehydrated in alcohol and cleared in cedar oil, very delicate bacilli could be detected now and then, especially near the periphery of young nodules. As a rule they were very rare, but no other organisms were found.

Löffler recommends for the study of the bacilli of Glanders, both on cover-glass preparations and sections, very recent nodules from the lungs of inoculated guinea-pigs, as the bacilli are quite numerous in this situation. For cover-glass preparations he found the following solution to give the best results: Aniline water, gentian violet,† or fuchsin is mixed with an equal volume of 0·1 per cent. caustic potash, or ½ per cent. liquor ammonia, directly

* The full publication of their experiments will be found in *Arbeiten a. d. Kaiserlichen Gesundheitsamte*. Berlin, 1886, I, p. 131, and their preliminary report translated in volume 95 of the New Sydenham Society, 1886.

† This stain, used in the study of tubercle bacilli, is made by shaking up 5 cubic centimeters of aniline oil in 100 cubic centimetres of water and filtering. To the filtrate is added 11 cubic centimeters of a concentrated alcoholic solution of the aniline dye to be used, in this case either gentian violet or methyl violet or fuchsin.

before using. The cover-glass preparation * is stained by floating the cover-glass with the film down on the staining fluid for about five minutes. It is then dipped for a second into 1 per cent. acetic acid, to which a watery solution of tropaeolin oo † has been added, until a wine-yellow colour is obtained, and then washed in distilled water, after which operation it may be examined or mounted in balsam for preservation.

From the nodules and tubercles in the liver, spleen, and lungs, the contained pus was used to inoculate tubes containing various culture media, both liquid and solid. A special value was put upon those lesions which do not in any way come in contact with the external air, such as those in the spleen and liver. Within three days the surface of those tubes containing blood serum appeared as if sprinkled with minute yellowish, translucent droplets. These droplets were made up of very delicate rods or bacilli, varying in length between one-third and two-thirds of a red corpuscle. Their width was from one-fifth to one-eighth of their length. They were either straight or slightly bent, with rounded extremities, and in general somewhat shorter and thicker than tubercle bacilli. In liquids they manifested active Brownian movement, but true spontaneous movements were never observed. They were without doubt identical with the delicate rods observed in sections under the microscope.

(*To be continued.*)

FORAGE FOR MILITARY PURPOSES.

BY GEORGE FLEMING, C.B., LL.D., F.R.C.V.S., PRINCIPAL VETERINARY SURGEON OF THE ARMY.

LECTURE II.

(*Continued from page* 195.)

DISCUSSION CONTINUED.

Colonel F. J. GRAVES *continued:* I know of another occasion where again, through being unable to get evidence, we were foiled; in one day a thousand pounds' weight of straw was issued short of what should have been issued. With regard to that very cake before you which I invented, I got a letter one day from my manufacturer, telling me that when His Royal Highness had ordered a certain number of horses at Hilsea, which were in a very bad condition, to be put on that cake to see how they did on it, about a week after this cake was issued, two quarter-master-sergeants of the troops stationed there came into the office. They said "Good morning" to my manufacturer. He said, "What can I do for you; what is your business?" "Well," they said, "we have come in the ordinary way of business. You have just got the contract for the supply of our horses, and we thought we would just look in and see how things were going on;" and so on. "What do you mean?" he said. "Well," said the spokesman of the two, "it is usual that some sort of commission should be given in order that things may be made to go easy." My manufacturer had very special instructions from me on this point, and he replied, "I do not know whether you know it, but Captain Graves" (I was then Captain)

* Prepared by crushing the nodule between the ends of forceps and rubbing it in a very thin layer on the cover-glass. When throughly dry it is seized with the forceps, drawn three times through the flame of a Bunsen burner, the film side being held up or away from the flame. Pus from abscesses is rubbed in a very thin film on covered glasses and treated in the same way.

† This is not essential.

"is the inventor, and we are bound to him under articles of agreement, and anything that is done in connection with this cake we must put before him first." My manufacturer wrote to me giving me the very words that had passed, and I wrote back, taking steps that I flattered myself put a stop to that business there and then. The corruption that goes on with reference to the supply, both as to quality and to quantity, is something surprising, and ought to be made public and investigated in the most thorough way. We know the difficulty of getting evidence on this point; men will give you a vague report, they will say something about so and so, but as to coming to the front and stating it before a court-martial on oath, it is quite another thing, and it is very hard to get such evidence, and I believe the authorities are heartily sick of the job. I have now, Sir, a definite proposal to make which has been on my mind for some considerable time. Shortly, it is this. When a subaltern joins a cavalry regiment, he is supposed to have been positively born in a butcher's shop, in a baker's shop, in the middle of a hayfield, and of an oatfield; he is supposed to know good meat, good bread, good potatoes, good oats, good hay, good straw, good everything. He goes on with the ordinary orderly officer of the day to be taught his duty. After a very little time he is put on duty for himself; he has to go down and to pass the rations, and a lot he knows about them! He goes to the gate, and there you will see a boy of about four or five months' service, very often less —when we are hard up for officers for duty—passing in hay, and if you were to ask him the name of one single grass, as I did one fellow of my regiment, handing him a small tuft of Italian rye grass, he does not know it a bit. They have to pass this stuff in, and they know no more about it than the woman in the moon, if there were such a person. I believe firmly that if the thing is to be carried out satisfactorily in the way of supply as to quality and quantity, the proper men attached to the cavalry and artillery and mounted corps who should pass these articles, are the officers of the Veterinary Department themselves. There are a good many members of the Veterinary Department here, and I hope they won't think I am trying to urge the necessity of increasing their duties, but rather that they will take my proposition as a tribute to their greater knowledge and higher education in this matter. I admit myself that I do not know enough about forage now, and I would bow to the decision of a properly qualified veterinary practitioner in a matter which so urgently requires investigation as this does. I believe arrangements could be made in each regiment, at each station, so that the forage should be presented at a certain time when the veterinary officers were on the spot, without necessarily increasing their duty. After that was done it could be distributed to the stables in the ordinary course, but for young and inexperienced subaltern officers to have the power of rejecting or passing that which constitutes the mainstay of the horse's vigour, and the mainstay of the horse's usefulness, is to my mind utterly absurd. It is an important subject, and I do hope and sincerely trust that the Government may be led to take some steps to put it on a better footing. I do not think any better service has been done of recent years in this direction than that of the lecturer in bringing it forward to-day.

Colonel JOHN FRYER, C.B.: This is a very interesting subject. There are one or two points on which, if you will allow me, I should like to make a remark. I think we are very much indebted to the Principal Veterinary Surgeon for having given us such a very lucid, interesting, and useful paper. He was called to account for not having produced some plan or proposal for service and other matters, but that is exactly what he wants to hear us talk about. I think we are all agreed on one thing, and that is, that we in the British Army have been moving for many years on what I may describe as the rule of thumb with regard to the horse rations. I am of opinion, and

I think many others without the least braggadocio will say the same, that we have very little to learn from any Continental army with regard to the feeding of horses. I had the pleasure of travelling last winter in a great many of the capitals of Europe, and I cannot conceive anything more superior than the horses in London to those that you see in other European capitals. That is not caused by the breeding of the horses only, but by the care with which they are attended to and fed. I cannot help thinking we should do very much better by taking a leaf out of the book of some of our own great carrying companies which the lecturer has very properly brought forward to-day. Our rule of thumb is this, that we give oats, hay, and water. The oats are mostly foreign, and chiefly Russian. You may get 40 lbs. to the bushel, but with this very often a very thick-skinned oat, which will weigh heavy, and I suggest with all humility, that it would be far better to have a mixed food for cavalry and artillery horses, such as we see in some of the rations of the great metropolitan companies. I have had practical experience of some of these companies, being rather largely interested in them, and I can safely say that no horse working either in the London General Omnibus Company, or the Road Car Company, doing the work that they do, could possibly live on oats and hay alone. Give him as much oats of the class we feed our troops on as you like without other grain, and he will fall away in condition. Bulk also is necessary for condition, but I say we require to vary the ration by giving other grains with oats, and I should like to see that done very much. The next point we should inquire into is this. Does our present ration fulfil the requirements of our mounted branches in quality and quantity, or do we get as much out of the present ration as these great companies do out of theirs? My opinion is we do not, and for this reason, that we do not, as they do, chop and crush our food. By chopping you get the very essence of the hay and the essence of the oats; you get, in my opinion, quite 30 per cent. more out of chopped hay and oats than you do by giving it to them whole. There is one little matter which has not yet been mentioned, it is very cheap, and that is water. Water is the very essence of condition, no horse in the world will keep in condition unless you continually water him. "Water frequently" ought to be written up over every troop stable door—water, water, water. That is the one great secret of condition on a line of march or campaign, that the horse should be watered as often as possible. That may be outside the present question, but it is so. The lecturer said that the first action very often decides a campaign, but I think he will also agree with me that that army whose cavalry and transport stay the longest usually wins the campaign. Therefore the stayers are those which we hope to see in our cavalry, and cannot be attained without continuous care and attention in the feeding of the horse. I repeat, the two things we require are: 1st, that the ration should be varied when practicable; 2nd, that we should chop and crush everything, if possible by steam power. I believe these two points to be mainly necessary for the maintenance of condition in our horses.

The CHAIRMAN (Sir Beauchamp Walker): I have little to say excepting that I very much agree with the Principal Veterinary Surgeon in what he has told us to-day. I should like to ask Colonel Graves what 2 lbs. of ration did you take off—2 lbs. off the hay or off the oats?

Colonel GRAVES: Off the oats.

The CHAIRMAN: And still gave the save amount of hay. There is no doubt that horses require a certain amount of forage in bulk, at least our English horses do; but one cannot help observing—knocking about the world as I have done for a great many years—how totally differently the various races of horses require to be fed. In the German Army, to which Dr. Fleming has alluded, with the exception of the very big horses which are allotted to the cuirassier and lancer regiments, nearly the whole of the

horses of the old Prussian Army came from East Prussia, where they have breeding establishments of their own, and the only horses bought were the bigger horses, which are bred chiefly in North Germany and Mecklenburg. But there is a very strong infusion of Arab blood in the horses bred in East Prussia, and I had no doubt, during the long time I was in that country, that a great deal of their hardihood and endurance arose from that circumstance, because it reminded me very much of the horses with a more Eastern blood than our own which I had seen in other countries. It was extraordinary in Spain on how little horses did very hard work indeed: barley and chopped straw were the only forage we ever gave the horses there; and I believe in Arabia the horses do an enormous amount of work on a quantum of forage which people in England would hardly believe in—positively mere handfuls. You cannot in the Arabian desert, of course, have anything in the shape of hay; it really is nearly all grain, and a very small amount; I do not know whether Dr. Fleming can tell us.

Dr. FLEMING: 4 or 5 lbs. of barley.

The CHAIRMAN: There is a question I should like to ask Dr. Fleming—it reminded me of olden times—and that is what he thinks of sheaf barley as forage for horses. I believe any grain may be given, I believe even wheat on an emergency may be given to horses, if it is given with the sheaf straw. I had a remarkable experience of what sheaf barley can do while we were lying opposite Varna, preparatory to crossing for the Crimea. My then chief probably knew more about feeding beasts than any man in England. He had for a great many years looked after his own property in Ireland, and I believe had fed very largely himself for the Irish markets. One day he announced that the Commissary-General had informed him that we had no more forage for the cavalry. What on earth was to be done? He said: "It is no use putting the horses on too small an allowance. Horses must have a certain amount of bulk. If you do not give beasts a certain amount of bulk they are sure to go down." He said: "There surely must be something in the country." Now I had had a habit on the days I was not on duty of riding all over the country south of that part of Bulgaria towards the Balkans, and I had seen that the whole country was covered with ripe crops. I told Lord Lucan this. He said, "What have you seen?" I said, "I have seen quantities of barley, and they are just beginning to cut, in fact." I said, "If you will only look outside the tent you will see one field quite close to our camp." He said, "You come down with me to-morrow morning and we will see the Commissary-General." We went. The conversation was rather a curious one, and at last Lord Lucan said, "My Aide-de-Camp tells me that there is plenty of forage in the country, there is plenty of forage that can be bought. Now I know forage given in the sheaf can be used, even if it is barley, which is otherwise a very heating grain." "Oh!" said the Commissary-General, "that gentleman says there is forage in the country, does he?" Lord Lucan, with the sharp temper which he generally showed when he was being opposed, said, "Yes, if I buy the forage will you pay for it?" "Oh yes," said the Commissary-General, "I will pay for it." I bought 4,000 rations of barley before I sat down to dinner that day, and for nearly three weeks I rode all over the country with money in my pocket and bought barley for our horses, for that portion of the force which had not gone up the country, and as far as my recollection goes—I was not doing regimental duty at the time, therefore I could hardly speak to it as well as some others—the horses did extremely well and throve on that forage. Whether it would have answered for a continuance is another question, but I was particularly anxious to elicit a remark on the subject from Dr. Fleming. Water, as he says, does not form part of the horse's ration, but I wished he had said something about water, because I look upon it as nearly as im-

portant as the food. There has, I believe, a very good custom been introduced in all new stable fittings, and that is of having a receptacle for water which can be kept permanently filled. It was not in my day, and I am afraid it is not very much the case in our barracks, but I hope as we are building new barracks occasionally that it may be introduced, because I am convinced it is a very great point. I also believe running water to be about the best water we can give a horse. I remember being with my troop a good many years ago during an election in Ireland, and I observed that the horses fell off after the first two days. In consultation with my sergeant-major, as I believe every Captain ought to be as much as he possibly can, he said, "I think if we watered at the river you would find a very considerable improvement." We went down and watered at the river; and I took the horses back to Waterford looking very much better than when we left, which I very much attributed to watering them at running water every morning. I am afraid that altogether our stable fittings are much in the old style. Of all bad ways of feeding the hay, that of the high rack is perhaps the most hurtful: there is a great deal of waste and the horse's forelocks and eyes get filled with dust. I think in private stables now-a-days they are nearly all low feeding. I always crushed my own oats. I was a very poor man and very fond of hunting, and had very few horses. I tried to get as much work out of them as I could, and I always crushed the oats from the first day it was brought to my notice. I hope we may elicit from Dr. Fleming some opinion as to how he would modify our ration, because I always felt the reason why we had 12 lbs. of hay was that there was so much waste, and it was for the purpose of giving the horse from 8 to 10 lbs. really to eat. I had one very good rule in my troop during the years I commanded one, which was that if I did not go and look in on the afternoon, my subaltern or some non-commissioned officers did and stirred up the stablemen to going round and picking up the hay that was pulled down and put it back again, because there is no doubt that in feeding from high racks there is an enormous waste of hay.

Colonel FRYER: One-third.

The CHAIRMAN: That reduces it to 8 lbs. The rest gets trodden into the litter, and entirely spoilt for consumption. Certainly 10 lbs. of oats is little enough for the big horses we have in our Service, if they are to do hard work. My hunters had 16 lbs. always, beside it being crushed, and beside a handful of beans in each feed. I think we are all very much indebted to Dr. Fleming for having given us these two lectures. I only wish there had been more Officers of my old branch of the Service and of the artillery to listen to them, and to give us the advantage of their experience, and by so doing to elicit replies from Dr. Fleming, which are sure to supplement the information he has given us.

Colonel COLVILE: In the omnibus companies' stables the horses all have a receptacle in front of them for water, which is always full, and they drink how and when they like.

Dr. FLEMING: Mr. Chairman and gentlemen, I am very pleased indeed with the reception you have given my lecture. The paper itself is rather disjointed; the materials had to be collected from various sources, and some of them were derived from my own experience. Notwithstanding, the subject is a dry one, if you leave out the water, and it is a difficult thing to make it interesting to people who are not very enthusiastic in the matter of horses and horse feeding. I am only sorry we have not had a larger discussion on the subject, because from my peculiar position it is a difficult thing for me to make any proposals, and I was hopeful that the discussion which we might have had to-day would have informed me, to some extent at least, as to how to proceed in the matter of having an investigation into the foraging

of our horses. Nevertheless, so far as the thing has gone, I am satisfied. I am extremely satisfied indeed with the remarks which have been made, and I shall try to reply to the questions put to me to the best of my ability. The first question asked was as to the Syrian horses. The horses were entire. I do not think it makes much difference with regard to endurance: we have proved in India that the opposite conditions are just as good. It has been proved by the experience of cavalry officers in India that horses which were not entire worked just as well as those which were, and did not fight so much with each other. My experience, in China especially, of a number of Japanese animals we had, was that they were perfect brutes, and, I think, it is the experience pretty well of everyone who has to do with horses, that they are much better when they are not entire, that their fighting and injuries are very few; and not only that, but in reconnoitring, especially at night, entire horses will neigh, and if the enemy is within two or three miles he is sure to hear them. With regard to horses on shipboard, it is a matter for regret that our country is an insular country, so far as cavalry is concerned; because it is absolutely necessary that cavalry horses should be in first-rate condition. If we have to put horses on shipboard, of course we run the risk of their good condition rather deteriorating on a voyage; nevertheless, I contend that a horse in good condition is in a better state to withstand the voyage than if he were not in good condition. A horse sent on shipboard requires all the resisting power of good muscles and heart to endure bad weather at sea, and the horses which suffer most are those which are not in condition—that is, fat horses which have not had sufficient exercise before being embarked. The cavalry horse should always be in a fit state for a voyage, and the horse in the fittest state for the voyage is in the fittest state for active service. The rations, of course, differ from those which the horse gets on shore: they are adapted for the horse being kept in one position without exercise. With regard to the contract system for forage which now prevails to a large extent in this country, that was discussed in my last lecture. I know the system is a most obnoxious one, and all who have paid attention to it know that there is no part of the contract system in the British Army more exposed to cheating or robbery in every form than that which pertains to foraging, but the problem is how to get rid of it. At out-stations and small detachment stations it would perhaps not be expedient to send Officers to purchase the forage. I think permission ought to be given to the Officers who command regiments and detachments to buy the forage at first hand; but that again would entail special knowledge, and that knowledge every Officer does not possess, though there is no reason why he should not. Every Officer who has to do with horses ought to know good forage from bad, and be able to estimate the value of forage in the market. If the system of contract could be abolished, and Government could buy direct from the producer, I think it would be much cheaper for the country and very much better for the horses. With regard to the reduction of the ordinary ration, this has been tried. I myself made the proposition, seeing the amount of damage our horses often sustain in the stables during the winter season, and especially at out-quarters. In one of the cavalry regiments in which I served, it was our custom to diminish the allowance of oats in winter, and to give what was saved to the horses during the summer drills. Of course that was not always easily done; large barrels had to be provided, and sometimes we got the order to march before the summer drills began. But I was moved more particularly to make the suggestion from the fact that the casualties in winter in stables are very often much greater than in summer, from the fact that the horses are fed in winter as in summer, and not getting the same amount of work in winter, they amuse themselves by breaking each other's legs. It was proposed that during the winter season 2 lbs. of hay should be

substituted for 2 lbs. of oats; that, instead of 10 lbs. of oats, 8 lbs. of oats should be given, and instead of 12 lbs. of hay 14 lbs. of hay. The reports as to the result were of the most contradictory kind. One regiment had not been put on this altered ration long, before it was noticed that all the horses were starved-looking and weak, and a very great sensation was caused. At other stations at the end of a certain period the reports were favourable so far as the horses were concerned; they were in good health, and the casualties fewer than usual. From other stations, again, it was reported that the horses had lost condition, and were altogether unfit for the spring drills. So that the reports would tend to prove that it is not safe to reduce the present ration, either in summer or winter. This I do not agree with. I have already said that the horses should be fed according to their work: beyond a certain amount they should receive forage in proportion to the amount of exertion they undergo. I think if horses are standing in stables, doing little work, they ought to have fewer oats; more hay should be allowed if necessary, but some of the stimulating food should be withheld. Oats should be given in largest quantity during hard work. I think the present ration might be improved, so far as the materials are concerned. To keep horses upon oats and hay all the year round must be unsatisfactory for them. Some variation might well be made, and we have the example of large companies which employ heavy and light draught horses to show that a mixed ration is necessary and beneficial. If these horses were fed all the year round as our troop horses are fed, I do not think they would perform the same amount of work they now do. We all know that a mixed diet is necessary for ourselves, and it must be the same with the horse. I think if the oats were mixed at intervals with beans or maize so as to make a variation, it would be all the better; but, nevertheless, I do hold that horses should be fed in peace-time as you intend to feed them in war-time: therefore, if you gave them a mixed ration in peace-time they should also have it while on active service. With regard to sheaf wheat or barley, there is no doubt when the grain is pretty well ripe and the straw dry it may be used as food; but if the head is green and the stalk contains much sap, so that there is too much moisture, it will damage the horses. Of course wheat or barley given to horses unaccustomed to it is not the same as oats. We have the fact that in South Africa English horses, when they first arrived there from England, were fed upon "oat-hay" and did well, and there is no doubt that the unripe grain given in the straw is much safer than the grain itself. With regard to water, of course that is only part of the horse's ration on shipboard; it is not taken into consideration in connection with forage, either at home or in the field. It is most important, as has been said, that horses should have as much water as they can drink, and they ought to have water always before them whenever possible. If horses are kept from water a long time, they take an inordinate quantity, which is likely to do them harm, and I am extremely sorry that even in our new barracks the water trough, which is now so common in the stables of civilians, is not present as a part of the manger fittings. We have one improvement, however, the rack is on a level with the manger: the overhead racks are abolished: still I should be very glad indeed to see the water trough alongside the rack and manger. The modification of ration which we might hope for should be something on the scale of the German Army. As already stated, horses should be fed according to their size and the amount of work they do. I think there ought to be a peace ration and a war ration. A light cavalry horse weighing 700 lbs. cannot require, and therefore should not receive, the same amount of forage as a horse weighing 1,200 or 1,400 lbs. A horse standing in a stable, well groomed and kept warm, does not need so much food as a horse standing out in the open, exposed to the weather. I think there ought also to be a garrison ration

and a manœuvring or field ration; when the work is inordinately severe, let the ration be still more increased. The German scale of rations is, I consider, a good one, and it is well proportioned to the horses and their work. You will see a great divergency between the German and French rations. The French mounted corps for some years have been complaining about the underfeeding of their horses, and some experienced Officers of cavalry in the French Army say that their defeats by the Germans were largely due to the French horses being underfed and the German horses so well fed. This point is noteworthy, because if you compare the two scales of rations you will find a very great difference. I do not think I have anything more to say on the matter. The discussion has been satisfactory, but I am sorry we have not had a larger attendance of experienced Officers, so that we might arrive at some definite conclusion as to really what the forage rations should be.

The CHAIRMAN: It only remains for me to ask you to empower me to give Dr. Fleming a vote of thanks for his excellent lecture.

GOÎTRE IN THE HORSE.

M. NEYRAUD, veterinary surgeon in the French army, describes in the *Journal de Med. Vétérinaire* a case of Single Goître occurring in a troop mare. The tumour was on the left side, and hindered the respiration, circulation, and deglutition—in fact, rendered the animal useless, and it was proposed to get rid of it from the service. Neyraud, however, determined to intervene surgically before it was sold. After the skin had been incised to the required extent and the subjacent muscles divided, the tumour was enucleated by means of the fingers and the blunt extremity of scissors, thus averting hæmorrhage. After sufficient dissection, the pedicles containing the blood-vessels were ligatured, and the operation was terminated by free dressing of the wound with diluted perchloride of iron. The subsequent dressings were of an antiseptic kind, and the case made such good progress that in eight days the mare was sold to a milkman, who subsequently worked it to his satisfaction. As this case of thyroidectomy resembled those described by Massot in the *Journal de l'Ecole de Lyon* for 1886, Neyraud is of opinion that the single or double operation in the horse (removal of one or both lobes) is not followed by any ill effects on the animal's health.

EVERSION AND RUPTURE OF THE VAGINA IN A MARE.

IN May last, M. Andard, veterinary surgeon at Rochefort (Charente Inferieure), was called to attend upon a brood mare suffering from eversion of the vagina since the morning of that day, and he describes the case in the *Revue Vétérinaire* for August. It appears the mare had foaled fifteen days previously, and that before this event, and, indeed, during the latter period of gestation, the owner had noticed this eversion, but it was replaced spontaneously, and did not receive any attention. Parturition was normal, and the foal superb and vigorous. It was not until œstrum appeared again that the eversion once more appeared, but the tumour it formed was larger than before.

The mare was a primipara and four years old. She stood in the corner of a stable, looking dull and prostrate, and hanging at the end of her halter; from time to time she made violent expulsory efforts. From between the lips of the vulva there projected a round tumour of a bright red colour and about the size of a man's head. The inferior extremity of this tumour showed a circular opening into which the finger could be passed to the cervix of the uterus, which was slightly open. The superior extremity was pediculated by the contraction of the vulva, and plicated longitudinally. The tumour was smooth

on the surface and very easily depressible; on the slightest touch on it, the mare made extremely violent straining.

The diagnosis being perfectly established by these symptoms, measures were adopted for reducing this vaginal prolapsus. An assistant held the mare by the head, at the same time holding a side-line which, passed around the left hind pastern and the neck, prevented the animal kicking. Another assistant raised the tail and held it on the left side, at the same time pinching the loins so as to neutralise to some extent the straining of the mare. By means of a finger passed into the orifice of the urethra, the bladder was emptied; then, after some scarifications on the surface of the tumour, Andard squeezed the congested tissue so as to make it bleed, and so bring about a certain diminution in its volume and facilitate reduction. This being done, the hernied mass was washed antiseptically with tepid water, to which was added Jeyes' fluid in the proportion of 1 to 10.

At the first attempts at reduction the mare struggled violently, but was eventually overcome, and the vagina was all but restored to its normal position when a formidable complication presented itself. During a severe expulsive contraction on the part of the mare, Andard's hand passed suddenly along the mucous membrane of the vagina, and at the same moment the whole of a flexure of the large colon flew out in his face; this portion of the intestine had escaped through a longitudinal rent in the upper part of the vagina. In less time than it takes to describe the accident, a loop of intestine about five feet in length hung beyond the vulva, notwithstanding all the operator's efforts to arrest its expulsion and to neutralise the straining of the mare. Finally, after indescribably toilsome manipulations, the extruded viscus was returned to the abdominal cavity and the vagina replaced, but the case was considered a hopeless one. However, recovering from this discouraging incident, Andard decided to attempt closing the rent in the vagina, and for this purpose he employed an ordinary black thread and a needle. The wound and vagina were sponged with the antiseptic fluid, and the two serous borders of the rent having been brought together, a single suture was passed through them. The operation was difficult and laborious, because of the straining of the mare, but with patience it was completed. Then the vagina was well cleansed, and the straining continuing, it was decided to occlude the vulva by passing seven sutures through the labia, leaving the inferior commissure free for the passage of urine and the antiseptic injections to be used subsequently. To support these sutures, Andard applied the bandage described by Renault in the *Maison Rustique* of the Nineteenth Century, which consists of a leather collar furnished with a buckle and double cord which passes to the lower part of the breast, where they cross, go round the arms, again through the collar, and finally to the root of the tail, where each cord passes along the side of the vulva, at the lower commissure of which they are tied in a single knot, then together pass between the hind legs and are fastened over the loins.

The straining being still kept up, a man was placed behind the mare to make pressure on the vulva with one hand while he irrigated all the posterior region with the other by means of a cloth steeped in cold water. He also injected Jeyes' antiseptic fluid into the vagina every half-hour. The straining soon diminished in frequency and intensity, but the animal was prostrate; there was slight fever, and signs of pain were manifested when the abdominal walls were pressed, while symptoms of Colic were also apparent. A dose of ether was given. The animal passed a good night and next day began to feed, and suckled the foal. The sutures were removed from the vulva and antiseptic injections into the vagina were administered every hour, but the cord bandage was allowed to remain for another day.

On May 24th the condition of the mare was most satisfactory, and the case was considered as cured. Subsequently the mare showed signs of œstrum and was put to the stallion.

MODE OF TRANSMISSION OF RABIES AND THE APPEARANCE OF ITS VIRULENCY.

Not long ago Professor Galtier, of the Lyons Veterinary School, brought the subject of Rabies before the Societé de Biologie, with regard to its mode of transmission. He stated that the disease could be transmitted, though rarely, by the ingestion of food or water impregnated by its virus, by inhalation of infected particles, or by bringing the virus in contact with the mucous membrane of the conjunctiva or that of the genital organs. In giving guinea-pigs, rabbits, dogs, and sheep food and water to which rabific matter had been added, Galtier, like others, often failed to produce the malady. But in swabbing the buccal mucous membrane of thirty rabbits with matter from the medulla oblongata of a rabid animal, he had produced four cases of the disease. Of thirty other rabbits which had ingested an emulsion prepared from the same part, only two became rabid, although all had received a large dose. Galtier mentions an instance in which this knowledge might be applied to what may be supposed a useful purpose. A child put into its mouth an article which had been soiled by a rabid dog, and the Professor, under such circumstances, counselled the adoption of preventive treatment.

With two sheep inoculated by tracheal injection, he had one positive and one negative result. He introduced into the nasal cavities of fifteen rabbits virulent matter drop by drop (the heads being thrown back), and eleven of these became rabid, the period of incubation varying from twenty-two to twenty-eight days. Guinea-pigs did not sustain these nasal injections so well as the rabbits, but with them Rabies could be produced in this way in two or three of five experimented upon.

The conjunctiva, much more exposed than the respiratory mucous membrane to contact with rabific saliva, does not readily absorb the virus. When a virulent emulsion was dropped beneath the slightly raised eyelid, the animals experimented upon (guinea-pigs and rabbits) became rabid in the proportion of one to three in ten, but this proportion became doubled if the conjunctiva was wounded.

Galtier and his assistants, as well as animals experimented upon, have often given evidence of the preservative value of the tincture of iodine or iodised water employed immediately after virulent impregnation; but if any delay occurs in its application, recourse to Pasteur's treatment is advisable.

In twenty experiments made on female animals, Galtier succeeded in three instances in transmitting Rabies by injecting the virus into the vagina, or introducing it by means of a sponge; but he remarks that the disease is generally little advanced when œstrum occurs, and the products of the genital organs do not then seem to be virulent. Nevertheless, it may be conceived that a rabid dog will convey the disease to a female dog either by licking it, or having connection with it after licking its own penis, as rabid dogs have a tendency to do at the commencement of the disease. The human species also incurs the risk of infection through the mucous membranes, and especially if these be excoriated; as in the early stages of the malady rabid dogs become more affectionate, and are desirous of licking those they know.

The period at which the rabific virus appears in the saliva of rabid animals has been made a subject of investigation by Nocard and Roux, the results of which have been published in the *Annales de l'Institut Pasteur* for last March. The importance of this question can scarcely be over-rated. A person is bitten by an animal which does not exhibit any sign of disease at the moment, but which gives evidence of Rabies in the course of three or four days. The question then arises as to whether the wounded person incurs any danger, and whether it is necessary to have recourse to preventive treatment. The public is usually assured that there is no danger, and that the bite of a rabid

creature is only to be dreaded when the disease is fully developed. Hitherto science has furnished no precise information on the subject, and experts when consulted have found themselves in an embarrassing position. Experimentation alone could solve the problem, and Nocard and Roux applied themselves to its solution.

In undertaking the task, they decided not to adopt subcutaneous inoculation, which yields uncertain and slow results, and therefore infected dogs from the saliva of which they wished to obtain virus, by injecting an emulsion of the medulla oblongata from a rabid dog into the anterior chamber of the eye. They had assured themselves that this mode of inoculation would assuredly induce Rabies within a period of twenty days. The animals so inoculated were most closely watched, in order to detect the earliest indications of the disease. Their temperature was taken every day; for the experiments of Hogyès, Babès, and Ferré had shown that some days before the appearance of rabid symptoms the temperature rises. This elevation of temperature is the first manifestation of the malady, for the infected animal does not otherwise exhibit any change in its ordinary deportment. So as soon as an increase in the temperature was noted, the experimentalists had the saliva collected, and injected it into guinea-pigs or rabbits.

The general conclusion drawn from these experiments, was that the presence of rabific virus in the saliva of the diseased animals is precocious. After inoculation into the eye, the saliva may be virulent *three days* at least before the appearance of any change in the manners of the dog. This result may evidently be applied to bites on the head. In the case of subcutaneous inoculation performed in the region of the neck, the saliva may be virulent thirty hours at least before there is any symptom of Rabies.

A dog may therefore present all the external signs of health—eat, be lively, and affectionate as usual—and yet carry in his mouth the poison of a deadly disorder; so that if it licks anyone it may communicate a disease from which it is apparently free. And perhaps the saliva may even be noxious before this period, for the subcutaneous inoculation employed by the authors is often untrustworthy, and, besides, it must be admitted that the virus, at the moment it arrives in the mouth, can be found there in only a small quantity. In order, then, to demonstrate its presence, the inoculations should be multiplied. Having in view all these considerations, Nocard and Roux are of opinion that, in asserting that a dog may be dangerous three days before the appearance of Rabies, they are rather within than beyond the truth.

HYDROPHOBIA IN A COW.

Mr. W. W. Curd, New Providence, Calloway County, Ky., writing under date of July 2nd, 1887, gives the following account of a cow that was attacked and died of Hydrophobia:—

At the request of several farmers of this county I send you the following description of a disease caused by the bite of a rabid dog. Recently there have been killed in this county several dogs that were supposed by several of our leading physicians to be suffering with Hydrophobia. A number of cows have died in my neighbourhood, all affected in the same way with the exception of one, which vomited often. The last case I visited daily during her illness. She showed the first symptoms on Friday morning and died on the Tuesday night following. She seemed to be mad from the outset until her death. She would chase the family hogs, sheep, and geese, and once caught a goose, killed, and ate it. At times she would attempt to graze, but I do not think she bit off any grass. She would come up to the cow-pen and eat a few ears of corn, but would allow most of it to fall out of her

mouth. If any one attempted to approach her she would gnaw the rails and bellow. She would not chase, nor did she seem to pay any attention to her nine months' old calf. No unusual thirst was apparent—no dread of water; slabbered profusely at the beginning of her illness but scantily towards the end. An anxious expression or wild look of the eyes was always apparent. She held her head very high while lowing, which she did incessantly both day and night. She seemed greatly distressed and in a most piteous condition. There was some tremor about the head and neck the evening before she died. At night she was always moving about with her head higher than common, and stepping higher than usual, like a blind horse, though her sight seemed good.

A young lady in this vicinity was bitten by one of these rabid dogs, and died of a disease which several of the leading physicians pronounced Hydrophobia.

ANTHRAX IN THE UNITED STATES.

In April, 1887, Messrs. John B. Mead and Edgar N. Bissell, State cattle commissioners of Vermont, notified the Department that Anthrax prevailed among a number of herds of cattle in that State. In the course of their communication they say:—

A malignant form of Anthrax has broken out in several herds of cattle in Bennington County in this State. Quite a number of animals have died during the past winter, but as soon as the fact of its existence was made known to us we at once proceeded to isolate the infected herds, and take such measures as in our power to prevent its further spread; and we hope, indeed, to be able to stamp it out altogether. But so great is the danger and so uncertain the hope of a speedy extermination that we respectfully ask of you to lend us the arm of the Federal Government in the prosecution of so important a work. The disease was brought here last fall in quite a large herd of calves purchased in New York. They were driven from Albany to Bennington County, and were scattered somewhat among the farmers of that county.

THE SUPPRESSION OF CONTAGIOUS PLEURO-PNEUMONIA.

Mr. Chaplin is wise in oiling the machinery by means of which the Board of Agriculture is to suppress Contagious Pleuro-pneumonia in this country. By taking the local authorities and the agricultural societies into council, he is securing co-operation which will be of the greatest assistance to him; and the Royal Agricultural Society especially, with its 10,000 members, including most of the principal breeders of live-stock, will be able to help him materially. It is most important that local authorities, and the tax-payers of the country at large, should bear in mind the fact that, in the suppression of a contagious disease, the first cost is the lightest, no matter how heavy it may be; as every pound that is saved in compensation for animals that should be slaughtered, *but are not*, may easily entail a loss of a hundred pounds in the long run through the spreading of infection. As the cost of compensation will now be spread over the whole country, instead of being a local tax, the temptation to avoid expenditure, to which local authorities have so often yielded, no longer exists. There is room to hope, therefore, that prompt information of every outbreak of this disease will be given to the Board of Agriculture, in order that its officers may be able to stamp it out before it can spread to other places. The only matter for regret is the unpleasant feeling that the Act has excited in the veterinary profession.

THE MANITOBA VETERINARY ASSOCIATION.

It is particularly gratifying to observe the extension of veterinary medicine in our colonies, and to watch the efforts of its practitioners to extend its benefits to the communities in which they have located themselves. The report of the half-yearly meeting of the Manitoba Veterinary Association, which we publish elsewhere, will, we feel sure, be read with interest, testifying, as it does, to the presence of enthusiastic colleagues in this somewhat remote province of our North American possessions, who find time to travel great distances, and read and discuss subjects of scientific and practical importance, just as if they lived only a few miles apart. The influence which this Association can exert—due, doubtless, to the worthy character of its members—has been demonstrated by an Act passed by the Legislative Assembly of the Province in last March, designated The Veterinary Association, which constitutes the Association a corporate body, having powers to qualify and register practitioners. Those who may be registered are graduates of the veterinary school established under the provisions of the Act, and persons who at the time of its passing were members in good standing of the Veterinary Association of Manitoba, as well as those possessing a diploma or certificate of admission as veterinary surgeons in any part of her Majesty's dominions, by any body or association empowered by law to grant such diploma or certificate. Penalties are imposed upon those who practise without registration, and every care seems to have been taken to protect and encourage the development of veterinary science, as is already done in the other parts of Ontario.

We give our heartiest good wishes to this institution, which will doubtless develop into a powerful corporation as the large and fruitful territory it controls becomes occupied by agriculturists and busy towns.

VETERINARY HONOURS.

The list of honours conferred upon our Continental colleagues has recently been greatly extended, and almost every month additions are announced. This is strong evidence of the progress that is being steadily made beyond this land in the elevation of veterinary medicine, and the readiness of foreign countries to recognise the efforts of those who are promoting this elevation by their labours and conduct.

On the commemoration of the centenary of the Berlin and Munich Veterinary Universities in July last, the following teachers of the first-named institution were honoured by the Emperor of Germany:—Professor Müller was made a Privy Councillor of State, Professor Schütz received the order of the Royal Crown (third class), and Professors Munk and Möller that of the Red Eagle (fourth class); while Professor Hahn, Director of the Munich University, had the dignity of Councillor of State conferred upon him.

The Faculty of Medicine of Munich has bestowed the title of Honorary Doctor of Medicine on Professor Friedberger, of the Veterinary University of that city.

Veterinary Surgeon Dele, of Antwerp, has been elected a titular member of the Belgian Royal Academy of Medicine, in place of the late Professor Wehenkel. Doctors Schindelka and Latschenberger have been made extraordinary professors in the Vienna Veterinary School, in recognition of their scientific activity; and Professors Neumann and Lesbre, respectively of the Toulouse and Lyons Veterinary Schools, have been made Chevaliers of the Order of Agricultural Merit.

Dr. Esser, of Göttingen, Departmental Veterinary Surgeon, has been elected an Honorary Professor in the University of that city; Dr. Lydtin, Chief

Veterinarian to the Government of Baden, has been nominated a Chevalier of the Wurtemberg Order of the Crown; Professors Hahn, Fricker, and Schütz are Chevaliers of the First Class of the Baden Order of the Lion; and Veterinary Assessor, Dr. Richter of Königsberg, has received the Third Class of the Prussian Order of the Crown.

To all these worthy colleagues we offer our sincere congratulations on their well-merited honours.

Army Veterinary Surgeon Steel, Principal of the Bombay Veterinary College, has been appointed a Justice of the Peace for the City and Island of Bombay. Dr. Fleming, C.B., has been elected an Honorary Associate of the Bombay Veterinary Association.

THE ARMY VETERINARY AND MEDICAL OFFICERS.

THE remarks we were compelled to make in defence of veterinary officers in the last issue of the Journal, have elicited the following rejoinder from the editor of the *British Medical Journal*, which appear in that periodical for September 13th, and to which, we think, no exception can be taken: indeed, it must be considered entirely satisfactory in tone and in sentiment.

"Our contemporary, the *Veterinary Journal* for September, in replying to our remarks, gives us credit for acknowledging the essential value of the veterinary staff towards army efficiency, but accuses us of sneering at its functions on service. Nothing was further from our intention; but we were indeed compelled by what we considered the overstrained comments in which it proceeded to make certain obvious comparisons between the importance of the duties in the field of those whose care is the human kind, and of others whose functions relate to the lower creation, nothing more. At the same time, we deprecated placing the claims and merits of the army departments in competition, a line of argument both invidious and unjust, resorted to by the opponents of the medical officers on the rank question, and which no doubt drew forth the remarks of Sir Andrew Clark, to which our contemporary took exception. We agree with him, that if the rankless army departments are to be unnecessarily forced into comparison, then none possess such unanswerable claims to titular military rank as the medical.

"Our contemporary disclaims any antagonism in this controversy towards medical officers, which we readily in like manner do towards veterinary surgeons; and well it may, for it has ever been heretofore through the leverage of the medical that the other army departments have been raised.

"We do not desire to exalt the medical over other army departments; for, as this controversy has developed, we have come to grasp more and more firmly the broad principle of military equality, now fully recognised in the French, Italian, and American armies; which is, that every officer and man in an army, whatever his functions, must have and hold definite titular military rank. Such title may, according to expediency, be either simple or compound, but must be military at least in part; such rank must be substantive and real within the limitation set upon the functions of the individual. Were such carried out, there would be little risk of friction, and no occasion for invidious comparison. Such we hold to be the true and coming solution of the rank controversy, one which the public will insist on when it is fully, as it is now being rapidly, put in possession of the points at issue. We feel quite certain enlightened public opinion will not tolerate, from whatever quarter it may emanate, any attempt to set up, foster, or maintain a jealous or exclusive caste system in the army, one alike unconstitutional and destructive of harmony and efficiency in the national forces."

Reviews.

GESCHICHTE DER RINDERPEST UND IHRER LITERATUR. By Dr. W. DIECKERHOFF. (Berlin: Enslin, 1890.)

Professor Dieckerhoff, of the Berlin Veterinary University, has made an important contribution to the history and literature of Cattle Plague, by the publication of a work presented as a "Festgabe" or memorial of the centenary of the great German Veterinary School, which was celebrated with so much ceremony and festivity last July. The ancient writers are largely quoted from for the earlier history of the scourge, but the history of the invasions of the disease in the middle ages, and even during the last century, is rather incomplete. The author appears to have followed Heusinger, whose classical Recherches de Pathologie Comparée, published in 1847, was a great improvement upon works which had dealt with epizootic maladies, but which was far from being complete up to that date, as Fleming's Animal Plagues testifies. But the history of the disease for the past half century is thoroughly gone into, and is very interesting and instructive, especially in so far as it deals with the pathology of the deadly affection. Doctor Dieckerhoff limits the transmission of Cattle Plague—beyond the bovine species—to sheep, goats, and certain ruminants in zoological gardens; but, strange to say, no mention is made of camels being affected, though there have been remarkable outbreaks among them in Egypt and the Kirghiz Steppes, and they appear to be very susceptible to infection. The arrangement of the work is good, and it is well printed on excellent paper. The price is thirteen shillings.

TOPOGRAPHISCHE ANATOMIE DES KORPERHÖHLEN DES RINDES. By Dr. REINOLD SCHMALZ. (Same publisher.)

This is another "Festgabee" work, produced for the same event as that of Dieckerhoff, and by a lecturer at the same University. It treats of the topographical anatomy of the cavities in the ox's body; it is to be published in four parts, the price of each being four shillings. The first part, which is now issued, treats of the thoracic cavity and its contents; the second part will deal with the abdominal cavity and organs; the third part with the pelvic cavity; and the fourth part, the cranial cavity. The work promises to be of much value to the surgeon and clinician, and judging from the part just issued, will be all that can be desired in the way of description and illustration. The tables are five, and are admirably drawn and finished; they exhibit transverse sections of the chest and its organs *in situ*, at different points, and are slightly coloured. The work may be considered a complementary one to the same writer's similar monograph on the horse—"Lage der Eingeweide des Pferdes"—published in 1888; it is certainly much in advance of Günther's "Beitrage zum Situs des Rindes," and reflects great credit on Dr. Schmalz, as well as on the school which enjoys the privilege of containing such learned teachers as those forming its staff.

THE THERMOMETER IN VETERINARY MEDICINE. By GEORGE ARMATAGE. (London: Warne and Co., 1890.)

This is a new edition of a little pamphlet which owed its origin to a paper on the subject of Thermometry applied to Animals, read before the North of England Veterinary Medical Association in 1869, and published by request. The subject was then attracting much attention among veterinary surgeons, and deservedly so, as the thermometer is an instrument of much value as affording indications of the advent, progress, and increase in severity or decline of febrile conditions. Though everyone now employs the thermometer as an aid in diagnosis and prognosis, and its use is therefore familiar in veterinary practice, yet the new edition of Armatage's little book, revised and augmented as it has been, may yet be read with advantage. One point only of disagreement we can find, and that is the range of normal temperature of the horse; but this may probably be due to circumstances which we have not encountered, though the temperatures of very many horses, placed under a large diversity of circumstances, have been registered by us. He gives the range as from 98° to 102°. We have never found it in health under 99° or above 100·2. In our experience, a temperature of 101° would create a suspicion of illness, and 102° would certainly indicate the presence of disease.

THE AUSTRALASIAN VETERINARY AND LIVE STOCK JOURNAL.

We gladly hail the appearance of a veterinary periodical for our great Australasian colonies, and sincerely trust that by its management, and the support it should receive from veterinary practitioners and others, it will prove a great success. Though it is only issued quarterly, yet this is no doubt an advantage at present, until a remunerative circulation is assured, when a monthly may be ventured upon. The present is not the first attempt to establish a similar professional periodical in Australia. Our old colleagues, the late Graham Mitchell and Thomas Chalwin, some eight years ago issued the *Australasian Veterinary Journal*, in emulation of our own; but not being supported by contributors, it briefly ran its course.

The new periodical is, we earnestly hope, destined to live and flourish, and in doing so to benefit to the utmost the progress of veterinary medicine in the group of colonies which has such a grand future before it. At any rate, its success should be ensured by the excellent editorial staff under whose auspices it saw the light last July. Our esteemed colleague and correspondent, W. T. Kendall, is the first on the list, and he certainly cannot be accused of lack of enterprise or courage, when we know that he has founded a Veterinary School at Melbourne, and has been the first, in English-speaking countries, to institute a four years' curriculum for students, with a proper preliminary educational test; the next is Prof. Goulé, M.R.C.V.S.; then Mr. Cameron, M.R.C.V.S.; and Mr. Burn, F.H.A.S. These collaborators are certain to do their utmost to maintain the credit of their profession, as becomes professional gentlemen; for they assert "it will be our endeavour to promote harmony between members in every conceivable way."

Periodicals have been started in our own country, it would almost appear with the sole object of creating discord, by introducing personalities and vulgar abuse, eminently calculated to cause disruption, and disgrace veterinary medicine in these islands. The Editors of the *A. V.* and *L. S.* Journal are no doubt aware of this, and are cognisant of the truth that a veterinary surgeon should be a gentleman.

The contents of the journal are of good quality and of interest to a wider circle than veterinarians. There is an Address to the Profession and to Stock-owners, papers on the History of Veterinary Science in Australia, on Fistulous Withers, Good Winter Feed for Stock, Sand in Horses, Drainage, Influence of Food on the Production of Disease, Prevailing Animal Diseases, Cross-bred Sheep, etc., with others, which make up an excellent number; there is a Register of Veterinary Surgeons, from which we learn that there are in Victoria eighteen members of the R.C.V.S., one from Copenhagen, and another from Berne (Switzerland), and forty-eight persons permitted to practise as veterinary surgeons under the Veterinary Surgeons Act of 1887, and registered by the Veterinary Board of Victoria without examination; while in New South Wales there are eight M.R.C.V.S.'s, in Queensland five, in South Australia two, in Tasmania two, and in New Zealand four.

We would appeal to our brethren in this country to support the Veterinary Journal of our kith and kin beyond the sea, whose welfare is so closely allied to our own. It is edited by gentlemen for gentlemen, and can well afford to dispense with the piquancy and fancied cleverness that some people think are to be found in effusions spiced with falsehood, envy, malice, hatred, and all uncharitableness towards others. We shall look forward to future numbers of the Journal with eager interest, as we expect important contributions from its contributors on matters deeply important to comparative pathology.

Annual Announcement of the Baltimore University School of Veterinary Medicine, 1890-91.

The prospectus of this school shows that it has an excellent staff of teachers, Professor Ward, F.R.C.V.S., being President of the Faculty. Students must be of good moral character, possess a fair education in English, and must attend the course on Latin and Greek. The course of study is the same as that in the Medical School of the University; twenty pounds is the fee on admission, and another twenty pounds at the commencement of the second course; at the final examination six pounds are paid for examination and registration. The dissection ticket for each term is two pounds.

Prospectus of the Melbourne Veterinary College for 1890.

As has been already mentioned, the period of study at this Australian school before a student can graduate is four years, each sessional year being divided into two terms of four months each. The examinations are similar to those of the R.C.V.S. The fees are one hundred guineas for all the classes, with the exception of practical chemistry; and one half is to be paid on entry, the other half at the end of the first year. The subjects taught appear to be very complete, and the staff ample.

Proceedings of Veterinary Medical Societies, &c.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

Veterinary Surgeons and the Pleuro-Pneumonia Act.

A SPECIAL meeting of the Scottish Metropolitan Veterinary Medical Society was held in Edinburgh on July 18th, "for the purpose of considering the new Pleuro-Pneumonia Act, and the position of veterinary inspectors and the profession generally as affected by its provisions." Mr. H. Thompson, Aspatria, President of the Society, occupied the chair.

The CHAIRMAN explained the object of the meeting, and stated that the greatest indignation was being felt with regard to the treatment of the veterinary profession under the new Act. The *North British Agriculturist* and the *Evening Despatch* were the only two papers that had taken the matter up seriously, and these two papers deserved the hearty thanks of the profession for the noble stand they had made on behalf of the profession. He hoped the question would be discussed by the meeting dispassionately, but at the same time they should let the Lords in the south know that there were Chiefs in the north.

Mr. R. RUTHERFORD, Hon. Secretary, read the circular calling the meeting, in which he indicated the points set down for discussion—the Act itself, the manner in which it affected veterinary inspectors, past, present, and to come, and how it affected the profession outside of them. He read a letter from Mr. A. J. M'Intosh, Dumfries, who wrote expressing his regret at being unable to be present. Mr. M'Intosh said he had read the articles on the subject in the *North British Agriculturist*, and he endorsed every word as to what had been said as to the insult that had been offered to the profession. More disgraceful treatment of the profession he had never known. Their profession had Professor Brown to thank for it. Poor, helpless profession! He had no doubt plenty of inspectors would be found to take out the lungs, put them in a box, and carry them to the railway station. If there was any pluck in the inspectors, not one should work under the conditions. Every veterinary society ought to resolve to stand against the work, and then something would come of it. He would never be one of those to help in carrying out such work, and he trusted that Edinburgh would give a very decided opinion. Fancy Williams, Walley, and M'Call sending lungs to London for an opinion as to whether or not they were affected with Pleuro! He was a Conservative in politics, but he had never seen anything better calculated to bring about a strong desire for Home Rule. Mr. Alexander Pottie, V.S., Paisley, wrote that, instead of stamping out the disease, the new Act would cause considerably more delay. A veterinary inspector was not to be allowed to make a *post-mortem* without consent, but there were many cases which would require the wisdom of Solomon to decide without a *post-mortem*. It seemed to him a most ridiculous proceeding to first declare stock infected, and then ascertain by *post-mortem* whether they were correct. Mr. A. Hutcheson, Dundee, also wrote in condemnation of the provisions of the Act for inspections. He held very strongly that men called upon to perform such duties should be practically acquainted with the habits of cattle and with the district in which they were called upon to act. Mr. Cameron, Berwick-on-Tweed, wrote in a similar strain, and said that one cause of the failure of the stamping-out process was the want of veterinary inspectors. There was only one veterinary inspector for the county of Northumberland. He (Mr. Cameron) and others had for many years reported cases of Pleuro, for which they got neither thanks nor reward. Mr. Donald, Wigton, wrote that he felt a gross insult had been done to the profession by the action of Mr. Chaplain and his Board. The best course for the profession to adopt, while present conditions remained, would

be to maintain a position of passive inactivity. If the Board of Agriculture could dispense with the services of the veterinary profession in dealing with animal diseases, he thought the profession could manage to live without their aid. Unless the Board was assisted, and very largely assisted, by practising veterinary surgeons, Pleuro would be more rife and widespread under the new administration than ever it had been under the old. If the Government desired to repeat their Cattle Plague experience, in spite of warning, he should be disposed to allow them to go on. Was it intended to declare a man's cattle provisionally affected with Pleuro on the opinion of a police officer, and then go through the red-tape of officialism by arranging for the slaughter of one animal as a test case? If that was the proposed method, he thought the stock-keepers had better be on the alert. Mr. Fisher, Whitehaven, wrote that he would have nothing at all to do in the matter under the proposed arrangements. He considered the conditions proposed for the local veterinary inspectors were insulting and degrading. The county veterinary inspectors were a more spiritless lot than he took them to be, if they submitted to officiate under the proposed conditions. It was preposterous to ask them in the first instance to take all the responsibility, and then be shunted out of the way to make room for the supposed greater lights from London, some of whom might possibly never have heard of Pleuro till they started from London with their instructions in their pockets. Apologies for absence, and expressing sympathy with the object of the meeting, were intimated from Professor Walley, Edinburgh: Professor M'Call, Glasgow; Mr. Greaves, Manchester; Mr. Bell, Carlisle; and numerous other members of the veterinary profession.

The SECRETARY read the draft of the "General Procedure under the Act, issued by the Board of Agriculture."

The CHAIRMAN said that one point they had taken umbrage at, was the proposed appointment of retired naval and artillery officers as inspectors, to take the place of veterinary surgeons. With reference to the "travelling inspectors," he had had experience of one of them. They had a heavy dose of Pleuro within three miles of his place. A travelling inspector was called down to prescribe the area; but the disease spread so fast that he had to prescribe the whole county, and they had not got rid of it all yet. That travelling inspector showed a lamentable amount of ignorance of the disease. Amidst great laughter, Mr. Thompson detailed how, on one occasion, an outbreak occurred in two byres, situated comparatively near each other. The travelling inspector wanted to find out how the disease had spread from the one byre to the other. After rummaging about the premises, he discovered a gangway leading from the one byre to a hay loft overhead, which opened out on the open space near the other byre. "Ah," said the inspector, "I've got it now. The disease has gone up the gangway, and through the hay loft, and dropped down on the other byre there." That meeting, continued Mr. Thompson, was only a feeler. He expected that there would be a mass meeting of the profession to take the matter up, unless they could arrive at some resolutions that would assist the Board of Agriculture in amending the Procedure Act before it came into force on the 1st September. They wished to have properly defined the duties of No. 1 inspector, and of No. 2 inspector. In one section of the Act the "local inspector" was the veterinary surgeon, and in another he was the police officer, who had power to call in the veterinary surgeon. He pointed out that after the end of August veterinary inspectors must not, under any circumstances, order the slaughter of cattle until they were directed by the Board of Agriculture, otherwise they might find themselves in a difficulty, from which it might not be possible to extricate themselves. In some cases it was difficult to say whether an animal was suffering from Pleuro. All they could say was that some of the symptoms were there. The new Act provided that upon an outbreak the owner must

inform a policeman. But who was to tell the owner that disease existed, if at present at certain stages the veterinary surgeon had a doubt? The procedure contemplated was absurd. If the "local inspector" thought disease had broken out, then the lungs of a slaughtered animal were to be sent to London for some of the great lights there to say whether it was Pleuro or not. He thought the veterinary surgeon on the spot was as able to examine the lungs and detect disease as any individual who never dirtied his patent leather slippers in a byre. He should like to know if Professor Brown had anything to do with the drawing up of the Act. He did not think that Professor Brown had done much for the profession. He sent out students, and then took the bread out of their months by a publication of which they had all heard. The biggest insult ever he offered to the profession was when he sent out that Act.

Principal WILLIAMS argued that with the travelling inspectors they had nothing to do. What they had to do was to discuss the clause in which it was stated that upon receipt of the intelligence the Board of Agriculture would immediately direct the slaughter of one of the diseased cattle, under the supervision of a veterinary surgeon. Up to that point of the proceedings there was no professional authority at all that the disease was Pleuro. The veterinary surgeon had no power to say it was not a case of Pleuro. He was called in simply to arrange for the valuation of the animal, and to send the lungs securely packed to London. He was not to express an opinion as to whether it was a case of Pleuro or not; he was simply there to see the animal killed, and to pack the lungs and send them on to London. They were all desirous to assist the Board of Agriculture in suppressing Pleuro, but he thought the Board should have endeavoured to have taken the veterinary profession along with it. It was an insult to the profession. He would pack no lungs in a box; a labouring man was quite competent to put the lungs into a tin box. After this point the responsibility of the veterinary surgeon began, as he had to examine and report on the other animals. If the examination in London proved the animal to have been effected, the Board would instruct the veterinary surgeon to have valued and slaughtered all the cattle which in his opinion are diseased. When he had done that the Board would send a travelling inspector, and the veterinary surgeon would be shunted. The result would be that in isolated districts owners would not report at all.

Mr. STORIE, East Linton, protested against the new procedure, and urged that a memorial should be forwarded to the Board signed by as many members of the profession as possible. He hoped if they could not make any alteration in the Act every inspector, would resign, and that they would not demean themselves by acting as was proposed they should do. The travelling inspectors were to be a soldier, a sailor, and a botanist, who knew nothing whatever about cattle.

Mr. RUTHERFORD, Edinburgh, held that the reporting of the contagious disease being left to the owner was a weak point in the Act. This was an Act which hit exceedingly hard at men who had long and honourably filled the post of inspectors; but there was another view of it, and that was that the whole veterinary profession would more properly fill the position of inspectors, so as to assist in the eradication of the disease. He had held, and still held, that the veterinary surgeon should have the responsibility of reporting the disease as much as the owner. In advocating such a procedure he was operating against his own interests, but he was prepared to offer his best advice as to the manner in which it should be done. It should be insisted upon that the veterinary surgeon also report the presence of the disease.

Mr. THOMSON, Aberdeen, said he did not interpret the instructions in exactly the same light as Professor Williams. He presumed that no policeman would say, on his own responsibility, that any stock-owner had got

Pleuro-pneumonia, but that he would have power to call in a veterinary surgeon before declaring the disease. What he objected to and deprecated very much was that the power should be taken from veterinary surgeons of verifying their diagnosis, whether right or wrong, prior to making their report. That was where the hardship came in, for the veterinary surgeon was often called in to define a conglomeration of symptoms which could not be defined with certainty without a *post-mortem* examination. The veterinary surgeon therefore was called upon to stake his reputation by pronouncing a definite opinion on such symptoms, while he was absolutely debarred from verifying his opinion by a *post-mortem*. A suggestion had been made by the Aberdeenshire Local Authority, that the Board of Agriculture should institute inquiries as to the channels of trade in special districts, for he thought it would be quite possible to so arrange matters that a county inspector, with his subordinates, should still perform the duties as at present. He would not be influenced by any selfish views, if he saw that the new orders were likely to be carried out with greater efficiency than hitherto; but he looked forward to bungling, inaccuracy, and inefficiency in investigating all the circumstances which led up to an outbreak. He regarded the travelling inspectors as quite incompetent to put the questions necessary to trace the disease. He thought the profession was being put on one side, and supplemented by men whose experience among cattle disease or hygiene was comparatively *nil*. He thought they should not come hastily to a conclusion, but have a representative meeting of all veterinary surgeons with the view of putting pressure upon the Government, and to show them that there was no desire to boycott the Act, but that they were animated by a patriotic desire to give all the assistance in their power in stamping out Pleuro-pneumonia.

Mr. ANDERSON, Glasgow, said the new Act was merely an auxiliary to the Contagious Diseases (Animals') Act. The penal clauses of that and other Acts still existed, and the new Act simply transferred the working of the Act, after the detection of disease, from the local authority to the Privy Council. He did not think they should be so thin skinned about sending the lungs to London. If they had had as much experience of Pleuro-pneumonia as he had, they would see that it was necessary that the lungs should be inspected by a competent authority, and the Board in London comprised three very competent men. He thought they should put their pride in their pocket, and see how the Act would work before they began to complain. So far as the intimation of outbreaks was concerned, he thought the onus of reporting disease to the local authority inspectors should still rest on the police.

The CHAIRMAN suggested that, instead of sending the lungs to London, the Board of Agriculture should appoint three competent veterinary surgeons—say, the county veterinary inspector, the local veterinary inspector, and another veterinary surgeon—to examine the lungs, and their decision should be final. That method would save a great deal of time and money.

Mr. CUNNINGHAM, Slateford, proposed the following resolution:—"That in the opinion of this meeting, the position of a veterinary inspector under the new Pleuro-pneumonia Act is beneath the status and dignity of a veterinary surgeon, and some of the duties he is called upon to perform are foreign to the nature of his calling."

Principal WILLIAMS at this stage read a letter which he had received from Mr. Cope, of the Board of Agriculture, in which he wrote:—"For all practical purposes the veterinary inspectors throughout the country will remain in exactly the same position as regards duties as before. Indeed, we contemplate requiring further professional work of them than they have generally been called upon to give to local authorities, and for the services they render I don't think they will have any cause to complain, so far as the rate of remuneration, etc., goes. In every outbreak reported, a M.R.C.V.S. will be

called in at once, who will have to report, as now, his views as to the existence of disease, but—what will, I hope, be considered more satisfactory—to us, and not to the local authority. Besides examining the cattle for Pleuro-pneumonia, we shall require professional opinions as to the state of all the cattle slaughtered, and of all the carcases prior to their being sold for human food. This will all be very responsible work, and will be carried on in conjunction with the professional officers of the Department, and we hope you will advise the members of the profession to assist cordially in carrying out the duties. It is quite an error to suppose that any but professional men will be engaged to carry out the duties which I have above mentioned." In a subsequent letter, Mr. Cope wrote that "the lungs of every first animal slaughtered will be sent to the Royal Veterinary College, because we have no convenience here for examining them. They will not be subjected to the views of any one in the College, but will be examined by Professor Duguid and myself." Principal Williams added that these letters showed that the action of the profession in Scotland in calling that meeting had not been without effect.

Mr. CUNNINGHAM, Slateford, said the post of Veterinary inspector under that Act was not one which veterinary surgeons with any self-respect could hold. At present, if a veterinary inspector thought that Pleuro existed, he ordered an animal to be killed to see whether he was right or wrong; but under the proposed rules he was compelled to send the lungs to London for the authorities there to say whether it was Pleuro or not. What veterinary surgeon was going to do that? Such a duty was beneath the dignity of a veterinary surgeon, and they should say so at once. He did not think any of them could act as inspectors after the 1st September, unless the Procedure Act was amended. As to the travelling inspectors, they were utterly useless for anything but spending a lot of the public money. One of them called upon him one day about a reported outbreak, and he drove him to the place and back again, a distance of some twenty miles. When they got back the inspector offered him 4s. 6d. for driving him that distance, and on his refusing to take it that official said, "You should take it; it's Government money." He could tell them how much that inspector (whom he named) knew about cattle, provided the reporters would leave it out. Mr. Cunningham was proceeding to expose the crass ignorance of cattle displayed by this inspector, when Professor Williams interrupted, and said that this gentleman was evidently no worse than the rest of these inspectors.

Mr. ANDERSON, Glasgow, said they ought to meet the Act with acclamation, and try by every means in their power to do what was requested of them and to make the Act a success.

Mr. CONNACHIE, Selkirk, said the sole thing they had to complain of was the proposal to send the lungs to London. In the alphabetical summary of the Contagious Diseases Act, it was stated that when an animal was suspected of suffering from Pleuro-pneumonia, a *post-mortem* examination must be made by the veterinary surgeon, as the *post-mortem* appearances of disease were so readily detected. Had the *post-mortem* appearances become more difficult to discover and recognise in 1890 than they were in 1878? He was a veterinary inspector of twenty-five years' standing, and he had gained the confidence of the different local authorities for whom he had acted as inspector; and he thought it was degrading that he should be asked to send the lungs to London, to see if disease existed after he had taken the onus and responsibility of declaring an animal infected. The veterinary authorities in London had floundered about the country with their Slaughter Order for nearly two years, and the disease was rifer now than it was when the order was issued. They had proved themselves a coterie of hopelessly helpless incapables.

Mr. ANDERSON said the meeting misunderstood the Act entirely. In his view, the lungs were to be sent to London for the purpose of confirming the local inspector's diagnosis. Professor Brown was the head of the Veterinary Department, and they must have a head in working such an Act.

Principal WILLIAMS: Yes; but he wants to be head and tail and everything else.

On a show of hands, Mr. Cunningham's motion was carried, Mr. Anderson being the only gentleman who voted against it.

Mr. THOMSON, Aberdeen, moved: "That the meeting memorialise the Board of Agriculture to afford to veterinary surgeons or inspectors reasonable facilities, by *post-mortem* examination, for proving the accuracy of their diagnosis before making a declaration.

Mr. REID, Auchtermuchty, seconded, and Mr. ANDERSON, Glasgow, supported Mr. Thomson's motion, which was carried unanimously.

Principal WILLIAMS proposed: "That instead of being compelled to send the lungs to London for examination, the veterinary inspector of the district shall consult with the veterinary inspector for the county, with a veterinary surgeon acting for the owner of the cattle; and only in cases of dispute shall the lungs be sent to London, as proposed by the new procedure."

Mr. CONNACHIE seconded the motion, which was adopted.

The CHAIRMAN complained that the travelling inspectors were not chosen from the profession, and suggested that some resolution condemning this should be drawn up.

Professor WILLIAMS maintained that this was not a professional question at all. He looked upon these travelling inspectors as a sort of superior police. He did not think, however, that the Society should interfere in the matter; but at the same time it was, as the country would find, a very expensive system.

This subject then dropped, and, on the motion of Mr. CUNNINGHAM, seconded by Principal WILLIAMS, it was agreed to send copies of the resolutions passed at the meeting to Mr. Chaplin, the Minister of Agriculture. A vote of thanks to the chairman brought the proceedings to a close.

R. RUTHERFORD, F.R.C.V.S., *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the County Hotel, Newcastle-on-Tyne, on August 29th, when the following gentlemen were present:—Members, Professor Williams, Messrs. J. W. T. Moore, J. Aitken, C. Stephenson, D. Dudgeon, F. Finney, W. Wheatley, J. Gofton, G. Mitchell, A. Chivas, G. R. Dudgeon, J. B. Nesbit, J. E. Tudor, W. Ashton-Hancock, J. E. Peele, A. Peele, G. Elphick, D. Macgregor; Visitors, Messrs. T. Aitken, W. Dotchin, J. Arup, T. Bowhill, and R. H. Potts. The President (J. W. Moore, Esq.) occupied the chair.

Letters of regret for not being present were read from Professors Walley, McCall, and McFadyean, and Mr. T. Greaves. The following gentlemen were nominated as members of the Association by Mr. D. Dudgeon:—Messrs. J. Aitken, D. Macgregor, and T. Aitken, of Newcastle-on-Tyne.

Alteration of Rule VII., so as to fall in with the proposals of the recent conference of representatives of the various veterinary medical associations held in London. The rule reads as follows:—"That the ordinary meetings of the Association be held quarterly, viz.:—on the last Fridays of the months of February, May, August, and November, at three o'clock in the afternoon, in Newcastle or district, as selected by the Association."

Mr. D. DUDGEON, who proposed the alteration of the dates of meetings to

the third Friday, instead of the last Friday, as at present, said there was, in his judgment, absolutely no reason that could be urged against the alteration of the date, and he could state positively that there are members who cannot attend the meetings on the dates as at present fixed, but who could attend on the third Fridays.—Mr. Dudgeon's motion was seconded by Mr. MITCHELL.

Mr. NISBET moved an amendment to the effect that the rule should remain as at present, and in doing so expressed the opinion that the Royal Counties Association had acted in a somewhat high-handed manner in the matter, and although he personally would prefer another day to Friday, he would certainly move that the rule be not altered.

Mr. STEPHENSON seconded the amendment.

The PRESIDENT then read some correspondence that had taken place between himself and Mr. Kidd on the subject, and stated that although he was willing to alter one of the dates if the Royal Counties Association did the same, he would not vote for Mr. Dudgeon's motion.

Mr. GOFTON thought it was a matter hardly worth quibbling over, and suggested they could not do better than agree to Mr. Dudgeon's motion, and have the third Fridays.

Professor WILLIAMS thought it would be as well to accept the dates fixed by the conference.

Mr. DUDGEON wished to point out that it was impossible for any gentleman to attend both meetings if he wished to do so at present.—Mr. Dudgeon's motion was ultimately carried by a good majority.

Mr. GOFTON said, with reference to the Defence Association, that he did not wish to find fault with the existing one, but he would certainly like to see it made more popular and more favourable to the members of the profession generally. The present methods of the Association were a farce, and he suggested a conference of the representatives of the several veterinary medical associations and the Defence Association, to see if some modifications of the existing rules could be arranged.—This subject was ultimately dropped before anything definite could be arrived at, owing to Professor Williams having to catch a train earlier than he anticipated.

Professor WILLIAMS then introduced the following subjects for discussion:

The Education of Students entering the Profession.—I consider the question of the professional education of the student of veterinary medicine to be of the highest importance, and I therefore do not hesitate to introduce it for the consideration of the members of this society. It must be admitted that each candidate for admission into our profession should be well grounded in English, by which I mean grammar, writing from dictation, arithmetic, history, geography, literature, and composition, and should also be, to an extent, acquainted with mathematics. Now, my idea of the examination test is this: Select, say, twelve subjects, and make, say, five or six of them compulsory, but giving the candidate the selection of those five or six subjects, and let him not pass unless he has obtained 33 per cent. Now, as to Latin, French, and German, you are aware that the Council have the intention of making Latin a compulsory subject, but the reasons given are not clear. It is very true that a knowledge of Latin is of real value in the culture of the mind, but as quoted by Mr. Atkinson in the *Record* for August 16th, from Huxley, "There is nothing in common between such high intellectual discipline and the progress by which young boys are ground up to the pitch of being able to construe some easy Latin." Then Mr. Atkinson says it is quite possible to find men ignorant of Latin with as high a standard of mental culture as we require. Then, again, we have Mr. Gladstone speaking upon this very subject in Flintshire: "In my opinion, classical education is in itself the very best for all those who have a certain tendency towards it, and those whose circumstances are such as will enable them not to be con-

tent with the merest rudiments, but who will proceed to the point at which they will realise some solid attainments. Terrible errors have undoubtedly been committed in the past, and in the past I include the days of my own experience, in endeavouring to thrust the classics down the throats of everybody of a certain rank, quite irrespective of capacity and circumstance. I always bear this in mind, that the main purpose of education is to make the human mind a supple, effective, strong, available instrument for whatever purpose it may be required to be applied to." Now, gentlemen, the question is asked by Dr. Willoughby Francis Wade, Does the Latinity extracted from every medical student answer best to the description of "merest rudiments" or of "solid attainments"? As regards medical students, are the terrible errors of the past, of the past only? These, gentlemen, are the opinions of men who have studied education as bearing upon the future life of the young, and are worthy of due consideration. I will now compare the knowledge of Latin with that of French and German, and will discuss it under three heads. First, Mental Discipline; second, Culture; and third, Utility in after life. I. *Mental Discipline.—French*; a good knowledge of French implies grammar, vocabulary, and idioms. An idiomatic language requires attentive observation. *German* is fully equal to Latin in those respects in which Latin is advantageous, viz., inflexion and conjugation, and the involved parenthetical construction of sentences. II. *Culture.*—Latin is never so far studied, except by clergymen and some lawyers or some professed classical scholars, as to be read with pleasure for the sake of reading alone. French and German are, when preliminary difficulties are overcome, brought up past the reading to the conversational point. III. *Utility in after life.*—The literature of the profession is largely French and German, and those who are responsible for the direction of the studies of men entering the profession who have little time for ornamental studies should have this in view, and get the greatest result obtainable in the time, by seeing that the young men are in possession of the key which will enable them to open the depositories of much of the best modern information. Knowledge of Latin is always in the background in real life. French and German may any day be useful, and knowledge of either of them puts the veterinary surgeon on a level with his educated neighbours, and enables him to obtain data bearing upon much that may be difficult of explanation in the practice of his profession. To put an example of the utility of modern languages, let us suppose an outbreak of new and mysterious disease not discussed in the English language, would the inquirer turn to the Latin or the French and German for his information? Let the Royal College of Veterinary Surgeons ponder and carefully reflect before the imposition of what other and older corporate bodies are finding to be terrible errors of the past.

Professor WILLIAMS then made a few remarks on the new Pleuro-pneumonia Act, and expressed the opinion that veterinary surgeons would certainly be placed in a somewhat awkward position. He also touched upon the method by which setons are supposed to be beneficial in the prevention of Blackleg. In reference to the antiseptic treatment of Enteritis, he stated that he had given a large dose of carbolic acid at first, and subsequently repeated doses of the hypo-sulphite of soda, with very marked results.

An interesting discussion took place.

Mr. GOFTON, in reference to the Pleuro-pneumonia Act, said he could not approve of it, as it would, in his judgment, place veterinary surgeons in a false position. Concerning the antiseptic treatment of Enteritis, he would certainly give it a trial.

Mr. W. HUNTER could not agree with Professor Williams as regards the subject of Latin. It was of the utmost importance that we should be able to write our prescriptions in that language, so he would make it a

compulsory subject; he would also like to see French, German, and shorthand made optional. As to the Pleuro-pneumonia Act, he considered we had been treated very badly in the matter, and it appeared to him that the travelling inspectors had the sole duty of stamping out the disease. In his opinion, it should have been left to veterinary surgeons to carry out the provisions of the Act. As to Enteritis he had adopted the professor's method of treatment with good results.

Mr. BOWHILL next made a few remarks on setoning as a preventive for Blackleg, and showed to the meeting a special instrument he was in the habit of using in the treatment of wounds.

The usual votes of thanks closed the meeting.

W. ASHTON HANCOCK, *Hon. Sec.*

EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE above Association held their half-yearly meeting at the Bell Hotel, Norwich, on August 29th. The President, E. J. KITCHEN, Esq., Norwich, in the chair. After the usual preliminary business, the dates of future meetings of the Society were discussed, and it was finally arranged that the second Tuesday in February and July be the ones selected.

The SECRETARY next read a circular from the Central Veterinary Society respecting a "Resolution on Rabies." Each of the five clauses were discussed *seriatim*, and unanimously adopted. The discussion on a "New Charter, is it needed?" was referred to the next meeting.

The PRESIDENT then called upon Mr. DICKINSON, F.R.C.V.S., to read his paper on

"COLD WATER AS A THERAPEUTIC MEASURE."

Mr. President and Gentlemen,—The subject of my short paper is one which has given rise to great and exhaustive discussions in every branch of surgery and medicine. The practical study of the use of cold water as a therapeutic measure can be arranged as follows: Its local use in surgery; its general application as a tonic; and its employment in fevers. When cold is applied continuously to any particular region it acts as a direct and powerful depressant, varying, of course, according to its intensity. It is therefore, locally used to reduced inflammation, chiefly when the latter is of an active type. It is well to be cautious in its application for this purpose, and not to be too persistent, lest it suspend nutritive functions, and interfere with the reparative process, which naturally form a part of inflammation. As is well known, excessive cold produces Stasis and even Gangrene, which might be the result of too energetic an employment of this agent. Locally, cold is usually applied by irrigation, sometimes by the application of pounded ice enclosed in india-rubber bags. A very useful mode of employing cold to the mammary gland of cattle is by using the ice poultice, made by mixing finely broken ice with fine dry sawdust.

In combating inflammation, cold application must be continued until the desired effect is produced. Cold applied at intervals becomes a stimulant rather than a depressant, the subsequent reaction which follows the first impression being greater than its direct effect. This may be exemplified by the advantages of the cold douche as a stimulus to sluggish livers.

In Pneumonia and Pleurisy, I have witnessed great benefit derived from the application of cold compresses, and have seen respiration and rapidity of pulse reduced in a short period. It is much used in Croupous Catarrhal Pneumonia in children, especially on the Continent. Abercrombie and Niemeyer recommended the use of cold in Peritonitis, but in this country there is greater favour shown to the use of warm poultices. In Peritonitis in the horse I am convinced warm fomentations sometimes produce more

pain, and prevent the action of medicines (anodynes) than a steady flow of cold water over the abdomen. One patient, suffering from Peritonitis from a punctured wound in the groin, showed great increase of pain whilst being fomented, but after leaving him alone I was surprised to find that the pain and restlessness abated. When, for experiment, however, fomentation was continued, the pain and restlessness became manifest. This led to one of my first applications of cold, which was carried out from a tap in my infirmary, and the horse was evidently relieved, and expressed his gratitude as well as he could. I not only used cold to the abdomen, but directed the small hose into the wound, and from this my patient derived very great benefit. In a few hours his respiration and pulse were reduced, and his temperature lowered from 106 to 102·2. In Meningitis and compression I have seen the most remarkable relief given by the application of cold, both in ice bags and by irrigation. It is well, if possible, to consider the feelings of the patient in the selection of cold or warmth. Each application at first appears to do good, but warmth cannot be so long employed as cold, because it frequently exhausts the patient, whereas cold has an exhilarating effect. Liebermeister's researches prove that a cold bath under judicious use increases the oxidation of tissue, whereby elevation of temperature of the body ensues, and from this may be seen the inadvisability of carrying either to the extreme.

Everybody who is a bather knows what a beautiful re-action follows a cold plunge, and that re-action proves its tonic effect; but if the bath be too severe, or too long, it becomes a direct depressant, debilitating and lowering the temperature of the bather. When the vital power is sufficient to re-act after the plunge, cold is not only a tonic, but a stimulant; but when it is not followed by a re-action it may produce serious ill effects, partly from fatigue and partly from excessive abstraction of heat from the body. For example, take the man Dalton after his swim from France to England. The use of cold in fever was very much practised during the last century, so cannot be looked upon as any new feature, either in medicine or surgery. The Romans constructed small aqueducts from the large rivers for the purpose of irrigating their limbs after injury, especially for flesh wounds.

Before speaking with certainty of the precedence of cold over warm water, it is imperative for us to consider the physiological effect of cold in inflammation and fevers. During irrigation to the body or to a limb, the temperature certainly falls, although primarily there is increased animal heat. After irrigation the animal heat continues to fall, and gradually regains its former point. This evidence does not show that there is any tissue waste or diminished urea, or carbonic acid formation.

From statistics gathered from medical authorities in nearly 20,000 cases, including Typhoid and Typhus, with all forms of complications, in all ages, in all kinds of practices, including military and civil life, the average mortality was slightly over 7 per cent. In these the treatment was carried out with more or less care, whilst others who have conducted the treatment thoroughly, having confidence in it, the mortality was only a little above 3 per cent. From these statistics it is at once seen, and undoubtedly proved, that the cold water treatment is attended with a very small percentage of deaths.

Many arguments may be used both for and against the cold water treatment, especially in Pneumonia, and Bronchial and Laryngeal affections. When the fever in Pneumonia is of an adynamic type, it can only be put down as the result of greatly increased temperature. In very severe lung cases, I have seen subsidence of fever from cold application, and in others of equal intensity the temperature remain exactly as it was when warmth has been applied. I have never noticed any ill effects from the use of cold, and can certainly say, on the other hand, that I have frequently wished I had used it in many cases where there has not been the accommodation. In all Laryngeal

affections, cold irrigation to the throat will be found to be a long way ahead of warmth, or even stimulation. In Scarlatina and Purpura, cold effusion has a very marked effect, particularly if the throat be very painful and deglutition impaired.

In conducting this treatment, certain care should be taken, which ought to be remembered, especially in the treatment of fever. You cannot give the patient cold unless the temperature of the body be reduced to nearly normal. The temperature will sometimes continue to fall after the cold bath, which is a guide not to prolong the bath. It is, therefore, most advantageous to employ it when the thermometer registers 104°. A cold bath, or any other application, never does good unless it removes the heat, but the cold should not be applied more severely than necessary. Perhaps it would be as well to describe how these baths are conducted, and this I will do when treating of their use in surgery.

From a surgical point of view, cold plays a more important part in the treatment of injuries, solutions of continuity in soft structures, sprains and fractures, than can be said of it in medicine—at least, so far as the veterinarian is concerned. I take it that cold is the most powerful agent in relieving and preventing inflammation we have yet discovered. It relieves pain by causing contraction of the different vessels, and limits, to a great extent, exudation, thus preventing tension and swelling. Never should the cold be so intense as to seriously lower the temperature of the injured part, or the mischief may be caused which the surgeon intended to prevent. In sprained tendons, capped hocks, badly broken knees, recent Curbs, Laminitis, injuries to the hock or other joints, the application of cold must be continuous until the danger of inflammation is passed. If applied at intervals the hyperæmia periods, which occur between the cold applications, undo whatever benefit has been derived during the time the part has been cooled. Irrigation may be continued in such cases as above mentioned, for from six to eight hours where a continual stream of water can be obtained. This is not a difficult matter, either from a pump or a tap. If from a pump, I generally fix up a barrel and pump it full of water. I have a small india-rubber or leaden pipe inserted into the bottom of the barrel, and conduct the pipe to the injured limb, and coil it round, first perforating it to the extent of eight or ten inches up the coiled end round the limb. This is very useful where it is not convenient to remove the patient. When acute inflammation has subsided, and the vessels of the part remain relaxed, cold is often a powerful agent in restoring lost tone to the parts, and for this purpose common salt and water are most beneficial.

When inflammation is well established, with swelling, heat, and pain, cold does harm, as it acts as a depressant, and diminishes the flow of blood by causing contraction of the arteries, increasing adhesion of the corpuscles, and retardation of the blood flow. Cold should never be applied when suppuration threatens.

In Poll Evil, where the sinus can be opened, so as to admit of a stream of cold water, I find it adds greatly to the success to irrigate in this manner two or three hours daily for a week. Afterwards the use of a mild astringent injection will often bring about a healthy action of the part, cutting short these troublesome cases, and saving a lot of time and annoyance.

Lymphangitis is one affection which is probably relieved much more quickly by irrigation for from five to six hours a day, than any other malady; the pain, fever and swelling are less by cold treatment than warm. Injuries to the leg from barbed wire do remarkably well under antiseptic irrigation, either with Jeyes' fluid or bichloride of mercury. The cases, in some instances, cause much trouble, owing to their septic tendency, which is accounted for by the possibility of inoculation from the wire. The method

I adopt is by placing a piece of bichloride of mercury in the india-rubber tube, and allowing a steady flow of water over it with Jeyes' preparation. I adopt the plan described by the proprietors in the sanitation of water-closets, by impregnating the water with their fluid through the medium of their fluid distributor.

The numerous discussions and opinions regarding the efficacy of warm and cold applications in the treatment of Laminitis have not yet led veterinarians to adopt the one or the other as a general rule. Personally, I use cold in every case, and can safely say I have never seen it fail in securing what I desired. Some years ago I was attending a six-year-old cart horse, suffering from Laminitis. He was in a small stall, from which I had him removed to a good open shed in a field. When on his way to this more commodious apartment, he went to the pond for the purpose, I thought, of drinking, but, to the surprise of all conçerned, it was to cool his poor, painful feet. He walked into the pond up to his knees and hocks, and there remained for some eight or nine hours, when he was, with great difficulty and the whip, persuaded to occupy a place under cover. The pond served for this horse's foot-bath for several days. On the second day, for experiment, we placed the fore feet in warm bran poultices, and opened the door of the box, when the patient again walked, with great difficulty, to the pond. This horse made a very good recovery from his own selected treatment, and the assistance of bar shoes, etc. Since this exhibition of a patient's knowledge, I have treated Laminitis with cold water instead of warm, and prefer it. Attached to my infirmary is a bath 2 ft. deep, and 14 ft. by 8 ft., which can be supplied with hot or cold water in thirty-five minutes. To the end of each pipe is a jointed circular pipe, perforated for irrigation of any part, or the whole of a horse's body; so that it has, and, I hope, will afford the very best advantage for testing the use of cold and warm application.

Mr. DICKINSON next exhibited a number of appliances which he used in conveying the water to different parts of the body, and minutely described his method of fixing them. The discussion that followed assumed more the form of an interrogation, each member acknowledging his experience to be very limited as regards cold water applications, but everyone found the essayist most willing to answer any questions, and give clinical proof of all the advantages which he claimed for the superiority of the cold over hot water as a therapeutic measure in a large majority of cases. The appreciation of Mr. Dickinson's remarks were most clearly indicated by the cordial vote of thanks proposed by Mr. Shipley, and strongly supported by all present.

R. S. BARCHAM, *Hon. Sec.*

THE VETERINARY ASSOCIATION OF MANITOBA.

THE half-yearly meeting of the above Association was held in the council chamber, Brandon, on July 23rd, President Dunbar in the chair. Present: Messrs. Fisher, Brandon; Rutherford, Portage la Prairie; McNaught, Rapid City; Spiers, Virden; Little, Winnipeg; and Young, Manitou. Mr. Torrance, of Brandon, was unavoidably absent, having been subpœnaed on an important case at Moosomin to give expert evidence. After the usual routine business, the President, Mr. Dunbar, read the following address, which was well received, as was also an exhaustive one by Dr. Rutherford, of Portage la Prairie, on Anthrax:—

GENTLEMEN,—We are assembled here to-night in this fair city of Brandon for the purpose of holding the semi-annual meeting of the Veterinary Association of Manitoba, and it affords me a very great deal of pleasure to have the honour of presiding at this meeting. I am glad to see so many of the members present, some of whom have manifested their interest in the Association by travelling a considerable distance. I may state that this is the first meet-

ing of the Association since its organisation. The meetings which have been held previous to this have been chiefly for the purpose of organising, and although there may be yet some minor details to be considered and settled before our organisation is fully completed, I am glad to be able to say that we have met here to-night as the Veterinary Association of Manitoba—an Association, it is true, only yet in its infancy, but which, I hope, as the years roll by, will exhibit a vigorous development, awakening and dispelling professional lethargy, and supplying to its members a stimulus to study and to acquire a deeper and more extended knowledge of veterinary science. The principal objects of the Association are the mutual protection and edification of its members and the general elevation of the veterinary profession in the province of Manitoba. With reference to the first of these objects, I may say that I believe the "Veterinary Association Act," which was passed at the last meeting of the Legislature, with which most of us are more or less conversant, will afford us ample protective facilities. The veterinary profession is a field in which the ignorant and superstitious quack, the boastful and presumptuous mountebank and empirics of every description have for ages held high carnival and up to a comparatively recent date there were no effectual legal means provided in any country for the suppression of such impostors. At the present time, however, and for several years past, some of the Governments of the civilised world, recognising the vast importance of veterinary science in its bearing on animal economy and as a field for medical and surgical experiment, have enacted laws giving more or less protection to those who have spent their time and money in acquiring a knowledge of it. The Act recently passed by the Legislature of this province is one which we, individually as veterinary surgeons and collectively as a veterinary Association, have reason to be proud of. It embodies almost everything that we could reasonably ask for, and let us see to it that we derive benefits from the privileges it confers. I will ask you, however, to bear in mind that where there are privileges there are also responsibilities, and let us, therefore, exercise the best judgment at our command, when called upon to assert our rights, by enforcing the privileges legally granted to us. A weapon wielded with skill and dexterity will do most effectual execution, but, if handled clumsily and incautiously, will very likely be the cause of disaster, or even death, to the one who uses it. Respecting another object of the Association, namely, the mutual edification of its members, I will say that the field is wide and the exploration of it ought to be inviting to every practical veterinary surgeon. I am sorry, however, to state that I am well aware of the fact that there are in the ranks of the veterinary profession too many persons who exhibit a deplorable lack of interest in their calling. They have succeeded in completing the curriculum of some veterinary school or college, have passed the examinations, received a diploma, and appear to rest in the belief that they possess all the knowledge and qualifications necessary for all time to come. It is high time that all such self-satisfied individuals should become aroused to a sense of their duty to themselves, their patrons, and the profession to which they belong. This is pre-eminently an age of progress in the scientific world, and in no department of science is progress making more rapid strides than in the branch which we, as veterinary surgeons, represent. If we unfortunately have in our ranks men whom we must designate drones, we have also men who are workers—men of intellect and culture, who are, by diligent research in the fields of medicine and surgery, making discoveries that will confer everlasting benefits, not only on the veterinary profession, but on the profession of human medicine and surgery as well. The fields of veterinary medicine and surgery afford ample opportunity for the scientific experimentalist to ply his vocation. The privileges of the pathologist are here unrestricted, for he can make a cadaveric autopsy at any time without injuring the feelings, sentimental or otherwise, of any of the

relations or friends of the deceased. The theory of micro-organism causation of contagious and infectious diseases has been principally established by experiments made on the lower animals, and it should afford us much pleasure to know that some very important experiments in this line have been successfully conducted by veterinary surgeons. Were it expedient, I could mention the names of many members of the veterinary profession who have become distinguished scientists; and doubtless there are many others in our ranks who are at the present time blushing unseen, but whom, I predict, are not doomed to always "waste their fragrance on the desert air." Fellow practitioners, as veterinary surgeons and especially as members of the Veterinary Association of Manitoba, let us be up and doing; let each of us use the knowledge we are possessed of for the purpose of acquiring more. "A little learning is a dangerous thing." Let us avoid that danger by learning everything we possibly can in connection with our profession. By doing this and communicating our knowledge to each other we will accomplish two of the principal objects of the Association, viz., mutual edification and the elevation of the veterinary profession in this province. True, there was a time when the practice of veterinary medicine and surgery was in many countries entirely in the hands of charlatans, whose complete destitution of knowledge of the science, combined with a mighty load of superstition, self-conceit and presumption, were their only professional qualifications. But, thanks to the Governments that have instituted and fostered veterinary schools and colleges, and thanks to the individual professional enthusiasm of many men, veterinary surgery takes its stand to-day as one of the learned professions, and there is no reason why a veterinary surgeon should occupy a lower position in the social world than any other physician or surgeon. Gentlemen, let us be true to ourselves, true to our profession, and let us endeavour to show to this province and to the world that the motto of the Veterinary Association of Manitoba—"Scientia Unita Fortior"—is not misapplied.

Mr. RUTHERFORD then read the following paper on

ANTHRAX.

MR. PRESIDENT AND GENTLEMEN,—The subject of my paper this evening, viz., Anthrax, is one of greater interest to the profession in this province than to veterinary surgeons in many other parts of the world. It is a very wide subject, and one which I can assure you I attacked with great diffidence, and only in the hope of acquiring from some of my fellow practitioners of larger experience their views upon several, to me, knotty points in connection with the disease.

Anthrax proper may be defined as a malignant infectious disease, seen most frequently in herbivorous animals, but capable of communication to man and to most other living creatures: due to the introduction to the blood of the bacillus anthracis or its spores, producing a breaking up of the red blood corpuscles and consequent arrest of oxygenation, showing its specific effects in various ways, but most constantly in rapid and extensive engorgement of the spleen, in more or less complete capillary congestion, and in diffuse gangrene of the tissues. Its ravages are widespread, and have been recorded for countless ages—from the era of Moses down to the present day the disease has been again and again alluded to and described in terms which leave no possible doubt as to its identity. Time, however, will not permit of our entering upon a history of this malady, more especially as the nature of my audience renders such a proceeding unnecessary. I will, therefore, by your leave, date my remarks from the discovery of the real character of the means by which it is reproduced and transmitted.

In 1863 Mr. Davaine, an eminent French scientist, was led to make some experiments in inoculation with the blood of anima's which had died of

Anthrax, and which blood was even before this time known to contain peculiar specific germs not hitherto specially connected with the production of the disease. Mr. Davaine found that these organisms, which he termed bacteria, were invariably reproduced and appeared in great numbers just before the deaths of the victims of his experiments, and he therefore rightly concluded that in these germs lay the agent of Anthrax contagion. His opinion was combated by other bacteriological experts, and the battle waged warm for many years; but in 1877 Pasteur set the question at rest by proving incontestably that the spore-producing bacillus anthracis was the essential agent in the propagation of this fell malady. Fortunately the contagion is not of a volatile type, but requires direct introduction to the animal economy, and to this fact is due the remarkable irregularity and apparent spontaneity of outbreaks of Anthrax. The danger of the propagation and transmission of the germ is, however, very great; in low-lying, swampy, alluvial, alkaline soils, especially if subject to inundation, the seeds of Anthrax have their favourite habitat, and some high authorities advocate, and apparently with reason, the theory that under such conditions they may live and multiply without the necessity of entering an animal host. Be this as it may, we find that when the disease has once obtained footing in a favourable locality, it is well-nigh impossible to eradicate it. Carcases, blood, sweat, urine, and fæces all contain the bacillus, and although this itself, when deprived of air, soon loses its vitality, the spores or germs are well-nigh indestructible, and are capable of reproducing the disease under the most adverse conditions and after an almost incredible period of time. Hides, wool, and milk from affected animals are frequently known to transmit the disease, while the consumption of the flesh, unless when thoroughly cooked, is often the cause of outbreaks among the human species. Experiments have demonstrated that the bacillus loses its vitality at a temperature of 145° maintained for four or five minutes, but that the spores withstand boiling for an even greater length of time. In San Domingo, in 1770, fifteen thousand people succumbed to Anthrax in the short space of six weeks; and in the infected districts of Siberia during bad years 25 per cent. of the whole population sometimes became affected, a large proportion fatally, from the consumption of the flesh from diseased animals. The virus, if brought in contact with the slightest abrasion of the skin or mucous membrane, will, as I can personally testify, produce the disease, while it is capable of being conveyed from one subject to another by flies, mosquitoes, etc., it having been successfully induced by inoculation with the stomachs, probosces, and other parts of such insects. The casts of earth-worms, taken from over the graves of animals which had died of Anthrax and been buried for many years, have also been found to contain the spores, and to be capable of inducing the malady in all its virulence. I am, however, of the opinion that in Manitoba outbreaks of Anthrax are principally due to the floating of the germs into the sloughs and low-lying bottom lands, where, in dry seasons, the cattle penetrate in search of water and of the lush grass there to be found; but whether, as some authorities claim, the germs are indigenous to such places, or have been deposited by defunct buffalo, animals which I have strong reason to believe were subject to this disease, I cannot, of course, pretend to determine. The influence, upon the animal economy of dry, hot seasons, of electrical storms, and of sudden changes of temperature, and especially the predisposition evinced by plethoric subjects, are all mentioned by leading authorities and have come under my own humble observation in the numerous outbreaks which I have had opportunity to investigate. It is claimed, and apparently with good foundation, that in dry, well-drained localities where there is a constant supply of pure oxygen percolating the soil, the germs lose their virulence and vitality, and that under such circumstances the disease dies out spontaneously, no matter how often introduced. The experience of prac-

titioners in infected districts has also discovered the fact that native cattle do not succumb to the disease with the same readiness as animals imported from non-infected districts, and the apparently tenable presumption is that they take a mild form and are then proof, by a species of inoculation, against its more serious attacks. Before leaving the etiology of the disease I would beg, gentlemen, to remind you, and this without prejudice to anything which I may say or ask in the latter part of this paper, that bacteriological scientists are agreed that Anthrax, properly so called, cannot occur without the presence of the specific bacillus in the blood and tissues of the animal affected. In this connection I would likewise beg to draw your attention to the following sentences from the pen of such an authority as Dr. George Fleming:—"In the meantime it may be stated that the question as to whether contagious diseases ever arise spontaneously is settled in the negative; spontaneous contagious disease has no more foundation than the spontaneous generation of organised bodies; and I need not discuss the primary origin of these diseases or the germs which occasion them, any more than I need do the origin of potatoes, turnips, dogs, or horses, when studying the attributes, derivation, or natural history of these or any other vegetable or animal body."

Anthrax varies much in the symptoms shown—the first and most acute form is that known to us for many years as Splenic Apoplexy. In some instances the attack is fearfully abrupt: the animal is apparently in good health and spirits when he suddenly becomes uneasy, bellows, stamps, perhaps charges blindly across country, paying no heed to obstacles or to attempted interference; he staggers, falls, struggles convulsively, blood and fæces are expelled from the anus, frothy bloody mucous from the nose and mouth, and death takes place in a paroxysm of suffering; others are quieter, staggering, trembling, panting, anal, oral, and nasal discharges tinged with blood, while coma, partial or complete, frequently precedes death. Some authorities are of the opinion that the heat of the sun aggravates and intensifies the symptoms. Be this as it may, the most acute cases I ever saw were on a cold day in the latter part of October, when old Sol was conspicuous by his absence.

In the form sometimes known as Anthrax Fever, or acute internal Anthrax, the first symptom noticeable is loss of appetite, followed by dullness, prostration, and shivering, the back is arched, the coat staring, lactation is suspended, and there is great thirst; the temperature rapidly rises, reaching occasionally 108°, the heart's action and the respiration are irregular, the mucous membranes rusty, and the natural discharges tinged with blood. Coma or delirium supervenes, and towards the last the skin, particularly in the lumbar region, becomes emphysematous from the generation of gases in the subcutaneous tissues. In this form death occurs from Asphyxia, due to the bacilli gradually depriving the blood of its oxygen, while the temperature accordingly decreases as dissolution draws near.

The third form, and that, in my opinion, most frequently met with in Manitoba, shows itself first in soreness of the skin, followed by a swelling of uncertain location and extent, sometimes small, circumscribed, and nodular, sometimes of a considerable size with an erysipelatous appearance and emphysematous under the hand. The swelling, if in a limb, is early accompanied by great lameness, while the constitutional symptoms resemble those of Anthrax Fever. Should, however, as is not unfrequently the case, the animal survive long enough, the swellings become gangrenous, and large portions of tissue are sloughed bodily out, leaving unhealthy and disgusting sores. When the tongue is affected, large blisters form which burst, leaving raw and painful lesions, having but seldom any tendency to heal, although in one outbreak which I had an opportunity of seeing, of over twenty young cattle affected with Gloss-Anthrax, not a single animal failed to recover.

Post-mortem examination in all cases of true Anthrax reveals a thickened tarry condition of the blood in the whole system, with frequent congestion of all the internal viscera, but more especially of the spleen, which may be enlarged to four or five times its normal size, while the microscope shows the bacilli swarming in the blood, which contains but few red corpuscles, and those partially disintegrated; the white corpuscles are, however, generally present in considerable numbers. A striking peculiarity of the carcases of animals which have died of Anthrax is the exceedingly rapid decomposition which takes place, due to the absence of oxygen in the blood; this gives rise to a general emphysematous condition in the aponeurotic tissues, which, appearing early after death, is of assistance in making a cursory examination of such carcases.

Of treatment I have little or nothing to say. Bleeding and physicking have been tried with, I think, negative results. Chlorate of potash and hyposulphite of soda are probably the best medicinal agents at our disposal, although, in my experience, it does not matter very much what one administers in acute cases, and when protracted the symptoms will suggest the most suitable remedial treatment for each patient. In local Anthrax the actual cautery is recommended in the first stages, and after sloughing has occurred I have found benefit from caustic and antiseptic applications; but I am not in favour of treating bovine patients to any extent, as I consider the risk of contagion from this terrible malady too great to be lightly undertaken on the slim chance of saving an animal worth perhaps only a few dollars. The best treatment is prevention, and this brings me to the first of two important points upon which I am anxious to obtain the sense of the members of this Association. We have in this province large tracts of unfenced, uncultivated land, much of which is marshy and in wet seasons inundated with water, and which is rapidly becoming covered with ever-increasing herds of cattle; we have also in our midst the bacillus anthracis, and as the cattle multiply he will doubtless follow suit, until, in some hot, dry summer, he will suddenly assert his terrible and now almost unsuspected presence by decimating our herds and bringing ruin to our stock interests. This sounds heroic, but it has been the experience elsewhere, notably in Siberia, a country resembling Manitoba in many respects. The following statistics speak for themselves:—"In Russia the losses are enormous, especially among the horses and cattle. In 1837, in one district alone, 1,900 died of Anthrax; and in 1857, for the Russian empire, it was reported that 10,000 horses had perished. In 1860, 13,104 cattle out of 18,883 attacked with the Jaswa succumbed; and from the official report for 1864 it appears that in the five governments of St. Petersburg, Novgorod, Olonetz, Tver, and Jaroslav 10,000 animals died, while 1,000 persons were infected and perished. From January 15th to March 27th, 1865, 47,000 cattle, 2,543 horses, and 57,844 other domesticated animals were lost in the governments of Minsk, Vitepsk, and Mohilev; and in the government of Tobolsk, in June and July, 1874, there perished from the "Siberian Plague" (as Anthrax is sometimes designated) 4,735 horses, 5,916 cattle, 1,030 sheep, 52 pigs, 15 goats, and 106 human beings."

As the law at present stands, the district veterinarians of the Provincial Department of Agriculture, upon receiving information of an outbreak of Anthrax, proceed to the premises indicated, examine the animals affected at the time of inspection, the carcases, if unburied, of such as have died, and the surviving members of the herd. The first they isolate, the second they order to be burned or buried, and the survivors they are supposed to quarantine. Now, under the conditions usual in this province, where large herds of cattle, the property of different owners, graze unrestrictedly and indiscriminately together over vast tracts of unenclosed land, and where, at some seasons of the year, the scarcity of fodder precludes the possibility of stabling the

animals, even when, as is but seldom the case, suitable stables exist, the quarantine clause, of which, under such circumstances, I question the advisability, becomes a dead letter. Again, how often is an inspector sent perhaps a long distance after ten, fifteen, or twenty animals have died, their carcases having been allowed to lie rotting on the prairie or to be torn up by wolves or dogs, which creatures, by the way, enjoy comparative immunity from the ravages of the disease. On his arrival he finds a few decomposed remains; there are no animals visibly affected at the time of his visit, although there may be a dozen sick within twenty-four hours of his departure. What can he do beyond delivering a lecture upon the origin symptoms and prevention of Anthrax to the owner of the affected herd, who may or may not bury his future losses, and who feels aggrieved and disgusted because the inspector can give him no sure cure or preventive for the disease, which, from his point of view, is certainly not of a contagious nature? Our Act is eminently adapted for the handling of Glanders and like diseases, and might, with a few alterations and in a more thickly-settled country, be of considerable benefit in controlling the ravages of Anthrax; but under existing conditions, and taking into due consideration the special nature of the origin and spread of outbreaks of this plague, I am of the opinion that it is the duty of this Association to impress upon the Government the necessity of special legislation, having for its object the prophylaxis of Charbon and kindred maladies.

I was at one time strongly in favour of preventive inoculation with the attenuated virus of the disease, a system which, under the direction of Pasteur and his colleagues, has reduced the death-rate in the infected districts of France from 1 in 88 to 1 in 1,254. The Government of India, and those of Victoria and New South Wales, are also about to follow the example of the European powers in adopting M. Pasteur's great discovery. The difficulty in carrying out the inoculations properly, and in the correct form of the particular malady with which it might be necessary to deal, together with the considerable outlay which such a system would necessitate, have led me, for the present at least, to abandon that idea. I am, however, convinced that special stringent legislation should be enacted, compelling the thorough and proper disposal of the carcases of all domesticated animals which may die, from whatever cause, under the supervision of local lay inspectors, who might be municipal councillors or constables; the district veterinarian to be called in, and his advice taken should a serious outbreak of disease occur. Such a measure would be of far more benefit to the country as matters now stand than the present arrangement, under which the inspector is constantly engaged in the highly entertaining but unsatisfactory occupation of locking the door of the stable after the abstraction of the noble animal lately contained therein. There is no doubt whatever that the principal danger in Anthrax outbreaks lies in the carcases of the victims, and that were they in every case properly disposed of, the probabilities of perpetuating the disease would be greatly diminished. There is another important reason for the adoption of a thorough system of carcase disposal in that the remains of the many animals which annually die in Manitoba from the affection variously known as "Black Quarter," "Symptomatic Anthrax," "Carbuncular Emphysema Erysipelas," or "Chabert's Disease," would also be properly attended to. This malady was, until a few years ago, looked upon by our most eminent authors and teachers as a form of malignant Anthrax, but it has now been proved to their apparent satisfaction to be a distinct disease, resembling Anthrax, however, in being due to a specific microbe, and in being capable of communication from one animal to another. The principal points of difference between Anthrax properly, so-called, and Black Quarter are that the latter is not communicable by inoculation of the blood, and that, although the introduction of the microbe found among the diseased muscles of an affected subject to the circulation of

a healthy animal will confer immunity from the disease, the virus appears to be incapable of attenuation, and will invariably induce its specific results if, intentionally or by accident, it obtain access to the subcutaneous tissue. I may truly here confess that I do not understand how a disease not affecting the blood can be prevented by the introduction to that fluid of its specific germ, but such is the dictum of our most eminent bacteriologists, and it is not for an obscure rural practitioner to question the results of their laborious and enlightened researches. I would, however, like to know how, save through the medium of the vital stream, the germ in an ordinary case of Black Quarter reaches its habitat among the muscles of the affected limb, and also whether the respective life histories of the bacillus anthracis and the microbe of Symptomatic Anthrax are so thoroughly understood as to preclude all possibility of connection between two maladies which in many instances, and in many respects, resemble each other closely both before and after dissolution. We cannot all be bacteriologists, and those of us who left college when the study of germs was almost unknown, and who are prevented by circumstances from indulging our tastes in that direction, have to be content with the crumbs, alas! often but meagre, which fall from the tables of our masters. Professor Williams, speaking last April at a meeting of the Yorkshire Veterinary Medical Association, took a strong stand on behalf of the thorough destruction of the carcases of animals dying from Black Leg, as well as of those which succumb to Anthrax proper, and recommends that, when burial is practised, a layer of bichloride of mercury be deposited round each carcase. Where fuel is obtainable the cremation of the bodies is certainly the best and safest plan, but, without dwelling on details, I would beg to reiterate my previously and frequently expressed opinion that it is the duty of this Association to recommend to the Government special legislation upon this subject, so rapidly assuming importance to the stock interests of the province.

A lively and interesting discussion followed, all the members present taking part, after which a motion embodying a vote of thanks to Mr. Rutherford, and the unanimous approval by the Association of his suggestions in regard to the prevention of Anthrax, was carried.

MELBOURNE VETERINARY COLLEGE.

Opening of the Fifth Session.

The commencement of the fifth session of the above institution took place on March 11th last. The inaugural address was delivered by the Principal (Professor W. T. Kendall), at three p.m. In addition to the students, a large number of gentlemen representing the stock-raising community attended by invitation, amongst whom were Mr. Frank Stuart, M.L.A., Dr. L. L. Smith, M.L.A., Mr. E. L. Zox, M.L.A., Mr. W. T. Carter, M.L.A., Mr. Robert Stirling (Chief Inspector of Stock), Mr. Latham (Inspector for the Society for the Protection of Animals), Messrs. Oldfield, Sharp, M.R.C.V.S., Cohn, M.R.C.V.S., Edwards, V.S., Scott, Burns, etc. Letters of apology were received from Drs. Plummer and Brett, and Messrs. Patterson, Desmond, and Callow. Mr. Frank Stuart, M.L.A., presided, and was supported at the lecture table by the teaching staff—consisting of Professors Kendall, Goulé, Jackson, Cameron, and Dr. Joyce.

The Chairman, in rising to introduce the lecturer, said it afforded him infinite gratification to preside on that occasion, because, although he was not connected directly with the stock-raising interest, he was fully aware that the wealth of the Australian colonies depended very largely on its live stock, and not only did he take a pride in encouraging anything that was for the benefit of the colony, but, as an Australian, he took a special pride in noting

the success which had attended this institution since its commencement, seeing that it was the only Veterinary College in Australasia, and was the outcome of a determined effort on behalf of the gentleman on his right to benefit the colony—an effort which, up to the present, had surmounted all obstacles. He was also, in common with most people who had been reared in the Australian bush, an intense lover of horses, and had oftentimes been animated by the same feelings that were depicted so beautifully in the lines:—

> "My beautiful! my beautiful! that standest meekly by,
> With thy proudly arched and glossy neck, and dark and fiery eye."

The PRINCIPAL, in the preliminary part of his address, while dealing with professional matters, referred to the working and administration of the "Veterinary Surgeons Act, 1887," which, in many quarters, had been considered detrimental to the profession, to the public, and to the advancement of veterinary science. Reference was made to the harassing conduct of the Veterinary Board in withdrawing its recognition of the College without any stated or apparent legitimate reason; to the injustice thereby done to the students; and to the complete vindication of the rights and status of the institution by a recent action at law, and the consequent regranting of due recognition under the Act. Going on to speak of the relation of the veterinary profession to the public, he said:—"The value and importance of veterinary science should be best known to the public through the administration of the Diseases in Stock Act and the Public Health Act, but the insignificant proportion of veterinary services availed of as yet cannot have led to any exalted notion of the profession as a whole. Whilst the Governments of other countries have found it advantageous to have a veterinary department to deal with epizootic diseases, the rule here is to only call in veterinary aid as a last resort. It is difficult to understand why the entire working of the Diseases in Stock Act should, with the exception of the inspection of imported stock, be entirely in the hands of laymen, and it is to be hoped that the new Diseases in Stock Bill will provide for a very different state of affairs. If it was necessary to engage a specialist from England as public health officer to the newly-appointed Board of Health, surely it cannot be denied that it is equally necessary to employ competent veterinarians to deal with diseases of animals in order to allow an improved Stock Act to be efficiently carried out. Serious outbreaks of disease are continually occurring amongst stock, of the causes and nature of which little or nothing is known, and up to the present no systematic effort has been made to investigate a single one. It has been a wonder to me that stock-owners have not long ago insisted upon this being done. Quite recently an Intercolonial Stock Conference was held in Melbourne for the purpose of formulating suggestions for dealing with diseases in stock, and preventing their introduction and spread, but of all the colonies represented, only two deemed it necessary or advisable to have a veterinary representative present. Victoria followed her usual policy of ignoring the profession altogether, with the exception of quoting opinions during the discussion that took place. So far as I can learn there has never been a veterinary surgeon on any commission of inquiry or conference relative to the diseases of stock. I think I am justified in stating that our old and respected friend, Mr. Robt. Stirling, who has been recently appointed Chief Inspector of Stock, holds a high opinion of the merits of special training, and I do not think it will be his fault if professional services are not more fully availed of in the future. It does not seem right that lay inspectors should have work thrust upon them which they do not feel competent to perform, and I am sure they would all gladly hail the regular employment of veterinary skill. Our retrospective view has certainly not

been a bright one, and it will be refreshing to look forward to a better state of things. Knowledge and experience have been gained in the struggles of the past, and a firmer footing has been obtained. Next year will be the centenary of the birth of the veterinary profession in Great Britain, and when we come to look back upon the struggles its founders had to gain a footing, notwithstanding Government aid and royal patronage, our own difficulties shrink into insignificance, and we may well feel proud of the progress we have already made. As a training establishment, this is in some respects equal, if not superior, to those in the old country now. The opportunities for gaining practical knowledge are admitted by all who have had any practical experience of other veterinary colleges to be second to none. It is also conceded that the accommodation and general appointments of the establishment are ample for all present requirements. There are, however, two other conditions necessary to make the undertaking a permanent success —viz., a competent teaching staff, and attentive and intelligent students. That we have the former, I think no one will deny, each teacher being virtually a specialist in his own subjects, and so far as the latter are concerned, I am proud to say there are among our students young men who would be a credit to any veterinary college in the world. The curriculum extends over a period of four years, which is a year longer than at any of the British or American veterinary colleges; therefore, I can see no reason why we should not be able to turn out well-trained men, with skill and ability to command public respect and confidence. We have it on the authority of our worthy chairman that colonials have been able to hold their own in other spheres of life. Why should they not give a good account of themselves as veterinary surgeons and be a credit to their profession and country? The practice of veterinary medicine and surgery gives ample scope for the exercise of both mental and physical faculties, and should commend itself to a large number of young Australians who have an innate fondness for animals.

No country in the world offers a better field for competent veterinary surgeons than Australia, whose wealth depends, to a very large extent, on the health and well-being of its live-stock. Every year the invasions of disease amongst our flocks and herds become more frequent, and the losses sustained from this source are incalculable. The intimate relationship between animal diseases and those which assail human beings is becoming more clearly demonstrated every day. The researches of such eminent scientists as Pasteur, Koch, Crookshank, and others, are continually shedding more light on this terrible reality. With the knowledge that such diseases as Tuberculosis, Actinomycosis, Pleuro-pneumonia, and a host of others, are to be found in almost every stock-raising district, and even in the dairy herds that supply our cities and towns with milk, is it not time to establish a thorough system of veterinary inspection? The whole of the money paid per annum for veterinary services by the Victorian Government would not amount to a decent salary for one man. In establishing defences to provide against the attack of a possible foe, enormous sums of money are annually spent, while on the other hand we have already enemies in our midst, in the shape of animal diseases, causing incalculable losses in wealth, and undermining the health of the community, and yet practically nothing is being done to prevent or arrest them. More money has been spent during the last few months in order to discover the existence or otherwise of typhoid germs in the Yan Yean water, than has ever been spent on investigating the causes and nature of animal diseases which are known to exist since the colony was founded.

The plea has hitherto been that there has not been a sufficient number of veterinary surgeons in the colony to take inspectors' work, and that, although there would have been no difficulty in introducing any number, it

was argued that the training received in other countries did not adapt them to the requirements of Australia. Let us hope that the home-made article will obviate the difficulty. If the Government were to establish a veterinary department under the Minister of Agriculture, with the means and appliances for a thorough and complete investigation into the nature and causes of obscure animal diseases, and to devise means for their prevention, eradication, or suppression, it would be doing more to establish the wealth and prosperity of the country than can be possibly estimated. The time has come when some effort will have to be made in this direction, otherwise the difficulty will become all the greater to deal with. I venture to say that the losses from preventable diseases exceed a thousandfold the expenses of an effective department. When the history of the introduction and spread of animal plagues in Australia comes to be written, it will be a revelation of bungling and mismanagement from beginning to end. With the exception of Scab in sheep, no systematic effort has ever been made to get rid of any of them. Had there been a veterinary department, as in other countries, it would have been the duty of those connected with it to assist in the drafting of Bills dealing with stock legislation.

It will therefore be seen that there is plenty of work for the profession to look forward to when the public has been taught by bitter experience, and acknowledges, through the legislature, that those who have had especial training, and have made a life study of veterinary science and hygiene, are the fittest persons to deal with animal diseases. In the meantime there may be a sort of grim satisfaction in knowing that the work is accumulating.

Apart from the diseases affecting the meat-producing animals, a few statistics regarding the losses occasioned by the mortality amongst working horses from ordinary ailments and accidents may not be uninteresting. We have ascertained from the different depots to which dead horses are taken that the average mortality in Melbourne and suburbs alone was, during this summer, about twenty per day, or 7,280 per annum. Taking the average value, say at £15 per head, the total losses per annum amount to £108,900. Probably half of these die from incurable diseases, accidents, and old age; but I venture to say that at least one-half of the remainder, if properly attended to by veterinary surgeons before being tampered with, would recover, and thus a saving of something like £30,000 per annum be effected. Apply this estimate to the rest of the colony, and it will be seen what Victoria loses annually by preventable loss in horseflesh alone. I do not believe that ten per cent. of the sick and lame horses in and around Melbourne are ever attended by a qualified veterinary surgeon. What an insignificant proportion must it then be that are thus attended in country districts, where professional aid is so difficult to obtain? I do not wish it to be inferred that horses die for want of doctoring; on the contrary, probably half of them are doctored to death by amateurs, even when professional skill is available. Ignorance of the action of drugs, over anxiety, and a desire to save expense, may be accountable to a great extent for this, but, on the other hand, there are hundreds of horse-owners, even in Melbourne, who have but a vague notion of the existence of the veterinary profession. It must be admitted that veterinary surgeons are themselves a great deal to blame. The profession, as a body, has never made a suitable effort to bring itself into favourable public notice. It has done nothing to advance veterinary science, colonial veterinary literature is extremely limited, valuable experience has not been recorded, and is consequently lost to the world. What little progress has been made has been chiefly done by individual effort. There is, however, a prospect of better things in the near future. We have in contemplation the issuing of a quarterly journal of veterinary science, which, besides being an organ for the profession, will be devoted to the

elucidation of veterinary sanitation and hygiene, which cannot but be of interest to stock-owners and the general public.

Although the aim and object of veterinary science is so little known or understood as yet, there can be no doubt that knowledge on this subject, as on others, will become readily diffused here. There are not the same deep-rooted prejudices and fallacies to contend with here that take such a time to dispel in older countries. We are in the midst of a young and vigorous population, which is ever ready to receive anything calculated to promote the wellbeing of the nation. The splendid educational establishments that are everywhere to be found are sufficient proof of this, and I have no doubt the time will come when a veterinary surgeon's advice as to the *prevention* of disease will be as eagerly sought and as readily paid for as for the *treatment* of some sick or injured animal. Perhaps, also, a time may come when boards of health will be considered incomplete without a veterinary officer to assist in tracing diseases to their sources. There need be no fear but that the profession will be thoroughly appreciated when it can be practically proved that the distribution of a number of well-trained veterinarians throughout the country are capable of effecting a saving of hundreds of pounds to individual stock-owners, and hundreds of thousands to the country. The value of the veterinary profession must not be judged by the men who have been registered without examination or undergoing any training.

I could say a great deal more about the value of veterinary science, but trust I have said enough to convince the most sceptical that the profession that you students have elected for a life's calling is one which affords ample scope for the exercise and application of the best faculties with which humanity is endowed; that it provides a certain path to an honourable and useful life, and that talent and skill are as readily appreciated here as in any part of the world. It cannot be expected that progress will be made in leaps and bounds—it is the steady, plodding, persevering worker who ultimately attains his object. There is every incentive to urge you forward in your studies, and the certainty that your services will be appreciated in proportion to the amount of skill and knowledge you acquire should make you doubly assiduous. The great Napoleon used to say that victories were gained by adjusting efforts to obstacles. When you meet with a difficulty, and I assure you there are many, tackle it manfully and bravely, and do not give up till it has been overcome. Many of the technicalities will appear difficult at first, but you will soon get accustomed to them. Do not attempt to rush your work, or you may be like an impatient horse that jibs half way up the hill. Your teachers are all anxious and willing to give you every assistance, but you must bear in mind that no amount of labour on their part can compensate for the want of diligence and application on yours. Junior students entering upon their studies will have the advantage of associating with the advanced students, and I have no doubt that any that have preconceived notions of the little they will require to learn will soon have that fallacy knocked out of them. The utmost we can do for you is to direct you in the proper use of your own faculties. We cannot use those faculties for you. Avail yourselves of your opportunities to the fullest extent, and remember that it is better to cultivate your reasoning powers and manipulative skill by constant practice than to depend on memory and the power of imitation. If you desire to be accurate in your information, take copious notes from the lectures, and read a little, well, rather than much, carelessly. If you would become expert operators make yourselves familiar with the scalpel and forceps in the dissecting-room, and learn your anatomy thoroughly. None of your subjects are unimportant, therefore slight none, and in all cases of doubt and difficulty ask the assistance and advice of your teachers. It will please them to give it, and benefit you.

In conclusion, let me thank those gentlemen who have honoured us by their presence to-day, and have thus shown that veterinary science is not without interest to them. I would also thank the representatives of the Press, which has done so much for the advancement of every branch of learning, and the general weal of animal and human life.

Mr. ZOX, M.L.A., moved a vote of thanks to the lecturer. He thoroughly agreed with Mr. Kendall that legislative action should be taken to prevent the spreading of diseases common to cattle and sheep amongst human beings who partake of their flesh. Whatever overtures were made to Parliament should, however, have the undivided support of all representative veterinarians.

The Hon. Dr. L. L. SMITH, M.L.A., seconded the motion. He coincided with Mr. Zox, and dwelt on the transmissibility of diseases of animals to man, notably Rabies, Tuberculosis, Glanders, and Anthrax. On looking over the prospectus of this college, he was pleased to see that the subjects were treated so scientifically and so exhaustively, and that the teaching staff was of such grand calibre, being composed of gentlemen with the highest qualifications, and ranking as specialists in their several subjects. It was his experience, when studying medicine in London, and he had also noticed the same fact throughout life, that greater success attended the teaching at institutions established by private enterprise than at those of a public character. Everyone connected with the former had an interest in its success, and, as a consequence, the students were turned out better and more successful men. Nevertheless, he was in favour of institutions of that kind being supported by the Government, so that they might assume a national character, and would do his best to further the interests of the profession, and of this institution in particular.

Mr. W. T. CARTER, M.L.A., supported the motion, and commented on the exceptional efficiency of all the departments of the college, and of the evident opportunities for practical training in the carefully conducted and extensive hospital and visiting practice. He would be happy to support his colleagues in furthering any step for the advancement of the college and the profession.

The motion was carried unanimously, and

The PRINCIPAL, in returning thanks, said it afforded himself and his colleagues immense satisfaction that their work during the past two years met with such high appreciation.

Professor JACKSON, B.Sc., F.C.S., etc., proposed a vote of thanks to the Chairman, and thanked him, on behalf of the teaching staff, for the kindly interest he had all along taken in their work.

Mr. LATHAM seconded the motion, which was carried with applause.

The CHAIRMAN, in responding, said that the Government should certainly hold out a helping hand towards the profession. If assistance was required to carry on the work so determinedly commenced and carried so far by Mr. Kendall, undoubtedly it was the duty of the Government to grant it. Efforts had lately been made, as pointed out by Dr. Smith, to obtain a site from the Government for an opposition college, but it must be remembered that these efforts had only been made after like efforts by Mr. Kendall and the late Mr. Graham Mitchell had failed, and Mr. Kendall had himself demonstrated by his own private means and enterprise that a veterinary college was needed, and its establishment could become an accomplished fact; and it was against all constitutional principles that a Government grant and subsidy should be made the means of "snuffing out" what private enterprise had inaugurated.

At the conclusion of the proceedings the visitors were afforded an opportunity of inspecting the hospital, museum, and other departments connected with the college.

Jurisprudence.

IMPORTANT INSURANCE CASE.

At the Towcester County Court, on August 19th, before Judge Snagge, Hawtin French, farmer, Cornhill, Pattishall, sued the Imperial Live Stock Insurance Association, Limited, 48, Pall Mall, London, for £30 for the loss of a black mare Blink Bonny, under a policy of insurance effected with the defendant Company for the purpose of insuring against the death of a mare through foaling. Mr. G. J. Phillips (Messrs. Pugh and Phillips, Northampton) appeared for the plaintiff, and Mr. R. F. Gibson, barrister (instructed by Messrs. Minns and Longden, London), represented the defendant Company. Mr. Phillips having opened his case at length, called

John Barnes Dawson, veterinary surgeon, Flore, who deposed he had been in practice at Flore for twelve years, and was a registered practitioner. He was agent for the defendant Company at the time in question, and in April last induced the plaintiff to insure his mare for £30. He examined the mare on behalf of the Company when the proposal was taken. On the 11th May the mare foaled, and he had not seen her for a few days previously. She was then in perfect health, and at work. He was not present when the mare foaled, but saw her the day afterwards. He then found that she was suffering from a chill. She seemed, however, to have foaled well, but was then suffering from Pleurisy and congestion of the lungs. Witness attended her up to her death, on the 14th May. Witness reported the illness of the mare to the Company. He stated the mare had foaled, and that she was suffering from Pleurisy and congestion of the lungs after parturition. He attended the mare till her death, and his opinion was that she was greatly excited during parturition, and that she had perspired freely, and had afterwards taken cold. That was one of the risks attending foaling. Taking all the circumstances into consideration, he thought the mare died from congestion of the lungs consequent upon taking cold during the act of foaling. He practically attributed the death to the foaling. He did not think the mare would have died in that way but for the parturition. Witness gave due notice of the death to the Company on May 20th, and asked advice as to how he was to proceed with regard to the policy. On July 10th it came to witness's knowledge that the Company declined to pay on the policy. They wrote that in consequence of the death being caused by Pleurisy and congestion of the lungs after parturition, which were in no way connected with the foaling, they were not able to pass the claim. Witness wrote back stating that he was surprised at the letter, as his certificate distinctly stated that the death of the mare arose from acute Pleurisy and congestion of the lungs consequent upon the act of parturition. His Honour called attention to the fact that the certificate stated after parturition. Witness further stated in his letter that he could only recommend Mr. French to insist upon payment, as it appeared to him an evasion to pay a just claim. If the Directors thought differently they should have signified their intention long before that, and not allowed eight weeks to pass before declining to accept the claim. Mr. French was a most honest, upright, working farmer, and would not have insured the mare if he had known of anything wrong, neither would he allow anyone to defraud the Association in any way while he represented it, which he should decline to do any longer unless the claim was complied with. Cross-examined by Mr. Gibson: The words "consequent upon the act of parturition" were not in his certificate, but "after parturition." He considered that consequent upon the act of parturition meant the time of foaling or thereabouts. He had been connected with the Company nearly three years, and had not made any insurances on his own account. Some of the policies included all risks, and others only foaling. In his opinion congestion of the lungs and Pleurisy were diseases consequent

upon the act of parturition. Horses were liable to take cold at any time. He did not suggest that the act of parturition produced the Pleurisy or congestion of the lungs. He was not a member of the Royal College of Surgeons, but was registered by the Council of the College. If he had been a member of the College he should have retired long ago. His Honour: Why? Do they retire early? Witness: A great many of them do. His Honour: Why? Witness: I don't know exactly. His Honour: Why would you have retired earlier because of being a member? Witness: Because I should have been able to have obtained a larger practice. His Honour: Why did you not become a member? Circumstances were against me, your Honour. By Mr. Gibson: He had known the plaintiff personally for about eighteen months. The Pleurisy was contracted subsequent to the parturition. Re-examined: He still said the mare died consequent upon parturition. Congestion of the lungs and Pleurisy were incidental to parturition. By his Honour: The disease was due to the weather, as there was a cold east wind prevailing at the time. The mare did not die wholly from the disease usually incidental to parturition. She died eventually from water on the chest, which was a common occurrence during parturition when the animals took a chill. It was not, however, connected with parturition. He did not know what the policy stated exactly. His Honour said the policy stated that insurance was only against loss arising by death from parturition. Witness said the mare did not die from parturition directly, but from disease incidental at the time. His Honour: What necessary connection is there between the taking of cold and parturition? Witness: The mare would be very susceptible of cold about that time. His Honour: In your view of the conditions covered by the policy, does that include death from any disease that may be contracted during the time when the mare was susceptible owing to parturition? Witness: Decidedly. The death ensued, in my opinion, consequent upon the chill during the parturition. By Mr. Gibson: There was a *post-mortem* examination, but not by order of the Association. He was not present at the time.

The plaintiff was next examined. He said he insured the mare for thirty-one days after parturition. That was stated in the policy. The mare was in perfect health at the time of the insurance. She perspired freely at the time of parturition, but every possible care was taken of her. He was of opinion the mare died from foaling and nothing else. He sent the usual notices to the Association.

Mr. Dawson, recalled, in reply to his Honour said the cold and congestion of the lungs were an incident of parturition, and not an accident. He could not attribute death to an accident, as every care was taken of the animal. He believed it was the parturition itself which induced the cold. The cold, in his opinion, was the result of parturition.

Mr. Gibson submitted that after that answer and the letter setting out that death was from a cold contracted after parturition, and in conjunction with the answer he gave upon that, there was no question which he need trouble the jury with.

His Honour thought the case must go fully before the jury.

Mr. Gibson then addressed the jury, and said he thought after the evidence placed before them very little doubt would be left in their minds as to which way the verdict should go. He wished it to be distinctly understood that the Association, although fighting and defending that case, did not wish to avoid payment, or wish to get the better of any person insured. It was, however, absolutely necessary for an Association carrying on so large a business as the defendant Company that they should be exceedingly careful that they themselves were not imposed upon. The policy taken out by the plaintiff mentioned that the insurance was in respect of death from foaling only, and if the

plaintiff had wished to have insured against any other risks he could have done so by paying a larger premium and taking another policy. What the Jury had to say was that the disease from which the mare died was one which was absolutely in connection with the foaling, and that had it not been for the foaling it would not have died otherwise. There must be something arising out of the incident to the act of foaling. He asked them if they could say that cold and parturition were the same things. He argued that they could not be joined together, and that it was from the Pleurisy and the congestion of the lungs that the animal died, and not from the foaling. He submitted that the plaintiff, upon the evidence, could not recover upon his claim. He also reminded the Jury that the policy in question did not insure any animal from death by any disease. He then called

Mr. T. H. Merrick, of Northampton, who said he was a M.R.C.V.S., and Inspector of the Northampton Division of the County. His Honour: And not yet retired? (Laughter.) Witness: Not yet, your Honour, and I am afraid it will be a long time before I shall. (Laughter.) Witness said he had been in practice for sixteen years. Pleurisy was a disease resulting from cold, and took a much longer time than three days to prove fatal. Over-driving and exhaustion would sometimes produce a chill. There was no connection between parturition and congestion of the lungs. It was not common for Pleurisy to accompany parturition. He had never known a case where he could attribute death to Pleurisy during parturition. Pleurisy would not be a natural sequence of parturition. Cross-examined by Mr. Phillips: Pleurisy would not be induced by parturition if ordinary care had been taken of the animal. Pleurisy could not develop and result in death under forty-eight hours. He did not see the animal in question, and he did not know what it died of. If it died from parturition it could not have died from Pleurisy after parturition. It was not his experience that mares in a normal state of parturition perspired very freely. Profuse perspiration never took place unless in difficult cases of parturition. His opinion was that the animal was unwell some time before she foaled. He had formed that opinion from the evidence he had heard that day.

Mr. S. J. Marriott, M.R.C.V.S., Northampton, deposed that the cause of Pleurisy and inflammation of the lungs was by the contracting of a cold, or by over exertion. He knew of no other cause. It would not be a fact to say it could be caused by parturition. Cross-examined: It could be caused by a cold or chill. In his experience mares did not perspire profusely unless in cases of very difficult labour.

Mr. Gibson, again addressing the jury, said the whole question was whether the mare died during parturition or otherwise.

Mr. Phillips submitted the evidence showed that the mare died from foaling, and also that she was previously in good health.

His Honour summed up the case at length to the jury, and in conclusion left the following two questions to be decided by them:—Did the mare die from foaling or parturition? Assuming they answered that question in the negative, then, secondly—Did she die from any cause produced or induced by special circumstances incident to foaling or parturition?

The jury retired to consider their verdict, and were absent some little time. On their return the Foreman said they answered the first question "No" and the second "Yes."

Mr. Gibson asked for judgment upon the decision of the jury. He did so because he submitted the policy held by the plaintiff did not provide for any special conditions, and the reply of the jury to the second question was that the mare died from special circumstances. The policy strictly stated the insurance was only against loss by death from parturition, and there were no special provisions. Further, it was stated the policy did not insure against loss by death from accident or disease.

Mr. Phillips was about to address the Court with the view of getting judgment entered for the plaintiff, when

His Honour said he felt he must direct that judgment must be entered for the plaintiff upon the finding of the jury. He supposed there was no question as to the sum of £30, as that was the amount of the insurance. He would, however, stay execution until the 1st December, so as to give the Association every opportunity of having the point argued in a higher Court if they thought desirable to do so. His Honour said he thought he should have entered the judgment that way even if he had had more doubt about the matter, for the reason that the defendants were presumably a wealthy corporation, and it was rather for them to take proceedings of that kind than for the plaintiff, who was only an individual farmer.

Mr. Gibson again said he wished the Court to understand the Association did not wish to avoid payment, but they were obliged to do so upon principle.

His Honour said the letter from the Association was a strong proof of that, as they said "if the death was caused by Pleurisy and congestion of the lungs which were in no way connected with the foaling we regret we cannot pass the claim."

Mr. Phillips asked that costs might follow the ultimate judgment, and his Honour replied that he would give costs on the higher scale.

ALLEGED CRUELTY BY A VETERINARY SURGEON.

On September 22nd, Harold Leeney, veterinary surgeon, of East Grinstead, and M.R.C.V.S., was summoned for cruelty to a horse at East Grinstead on the 18th August.

Mr. T. Duerdin Dutton, of London, prosecuted on behalf of the Royal Society for the Prevention of Cruelty to Animals, and Mr. W. C. Cripps defended.

Mr. Dutton, having received the Magistrates' permission to amend the charge from cruelty to causing cruelty, said the defendant was a veterinary surgeon, who had lived in the town for many years, and was a man of great skill and respectability. He was instructed that between five and six o'clock on the evening of the 10th of August defendant "threw" a horse for the purpose of performing an operation known as "unnerving," and in throwing the horse the spine was in some way injured. He then administered chloroform, though he believed chloroform was unnecessary for the operation, and it should, therefore, be taken into account that defendant did all he could to relieve pain. After performing the operation, defendant left the horse in the field without covering or anything to lay upon till ten o'clock at night. Mr. Dutton then detailed the other circumstances of the case, and contended that it was defendant's duty to have immediately put the animal out of its misery directly he knew that the spine was injured, and in neglecting to do so he had caused the animal a large amount of misery and suffering. He called James Wren, who said he was working at Mr. Turner's house between five and six in the afternoon of the 10th August, and saw the defendant, with his groom and Mr. Tingley, in the adjoining field. The defendant was dressing the horse's leg. About an hour later he saw the horse trying to get up; it was sitting on its haunches. The groom came out and unfastened the bridle, and went back to the stables. Defendant then came out and pulled the horse over on its side. He heard the horse groaning after Mr. Leeney had thrown it on its side. Henry Tingley, cowman to Sir Edward Blount, proved having assisted in throwing the horse. Defendant told him, after they had thrown the horse, that he believed they had hurt the animal's back. Cross-examined:

It was a nice, fine night, and there was plenty of soft grass in the field. Thomas Geer, a small boy, gave evidence as to seeing the horse in the field struggling to get up, and said he heard it groan. Mr. Harry Turner said he saw the horse shortly after eight struggling to get up, after which it would fall back exhausted, and would moan. It was painful to see it, and his impression was that its back was broken. At a quarter-past nine the horse was still struggling and moaning, and at about ten he went with his father and found the horse in the same condition. He complained to P.C. Howell. About twenty minutes to ten defendant drove up, and witness's father said, "Is this your horse, Mr. Leeney?" Defendant said "Yes," and his father replied, "Well, you ought to be ashamed of yourself to let a horse remain like that. I have taken upon myself to send for the police." Defendant then said, "It has been under chloroform," and fetched a gun to shoot it, but was prevented from doing so by the policeman. The horse was sitting on its hind quarters, and was plunging and crawling about in that position. Frederick Turner corroborated this statement, and added that he thought the animal suffered great pain. David Dadswell, of Godstone, said defendant came to him on the day in question and blistered a horse. Defendant told him that he believed he had hurt a horse's back, either in casting or throwing it. He said he believed it was due to the men being afraid, and that it was the first time he had injured a horse in that manner in a similar operation. Two days afterwards defendant told him that he did not know immediately afterwards whether it was the effect of chloroform or that the back was injured, but when he returned home he found the back was broken. P.S. Allman stated that he received information about the case in question at nine o'clock. The horse was then on its side, and was groaning. He left P.C. Howell in charge of the horse with certain instructions, and when he got back defendant was there, and said he was going to shoot it, but was prevented by the constable from doing so. Defendant then told him about the throwing, and being called away to Godstone, and said, "I suppose the tobacconist has seen it?" Witness replied, "Yes, the County Inspector has seen it, and thinks the back is injured." Defendant said, "Well, I thought so." Defendant subsequently shot the animal. P.C. Howell said that during the time he was in charge of the horse it tried to get up four times, but failed. The animal had the use of its fore-quarters, but not of its hind-quarters. Defendant told him that the horse was full of chloroform, and he was not certain whether it was that or an injury to the back that prevented it from rising. John Tully, veterinary inspector for the police and local authorities of East Grinstead, deposed that he accompanied P.S. Allman to the field. He found the horse groaning continually, and was suffering great pain. The spine was injured, and the hind-quarters were cold and paralysed. He could hear the horse groaning fifty yards away. The injury was apparently beyond all skill, and there were all the symptoms of a broken back. He believed the defendant must have known what injury had been done, and could have ascertained if the back was injured by pricking the tail with a pin. Cross-examined: Witness pricked the tail with a pin, and there was no motion. When recovering from the effects of chloroform horses sometimes groaned. He was not able to say that the horse's back was broken; a sprain of the muscles of the back would show all the symptoms which the horse in question showed. Professor William Pritchard, of Regents Park-road, London, a member of the Committee of the R.S.P.C.A., said the effect of chloroform was to render an animal insensible. At the time the horse was struggling to get up it was not suffering from the effects of chloroform. The fact that the horse could only use its fore-quarters would be evidence of injury to the spine, and pain would be caused by the horse trying to get up. He believed the defendant could easily have told if the horse's back was injured, and if defendant knew that

an injury to the spine had occurred it was, in witness's opinion, an act of great cruelty to leave it so many hours. Such injury would have been incurable. By Mr. Ravenshaw: I have never had a horse remain under chloroform for more than twenty minutes. Cross-examined: The operation which defendant carried out was a humane one, and it was no great cruelty to cast a horse in a field. It was not a proper act to leave a horse in the field after the operation. In the case of such an injury as he had heard described he would not have wanted more than half an hour to satisfy himself whether the spine was injured or not. Mr. John Lucas, Inspector of the R.S.P.C.A., produced several letters from the defendant, which were read and put in. The first was to the Society, and in it the defendant warned them against a case which was being trumped up against him at the instigation of unqualified rivals. The letter then went on to state that he had put the animal under chloroform for the purpose of carrying out the operation, and when he left it out in the field to allow it to exhale the chloroform, he found it in the hands of the police. He believed the case was got up to damage him in the eyes of unthinking people. The second letter was addressed to Mr. Lucas, and contained a statement that the police had discovered a "mare's nest," and that the "tobacconist" had been sent for in his official capacity, and such was the "cursed ignorance of local Bumbledom, that they prosecuted him when they allowed unqualified people to slay pigs and torture rams." Another had reference to "the arch torturer, the official tobacconist." Mr. Cripps addressed the Bench for the defence, and denied all charges of cruelty. Defendant was unable to ascertain whether the animal's spine was injured at the time, but immediately on his return from an urgent visit to Godstone he ascertained the condition of the horse and shot it. As a matter of law he contended that the case must fall to the ground. The first witness for the defence was Mr. Richard Roberts, M.R.C.V.S., and Inspector for the Tunbridge Wells District for the R.S.P.C.A., who said the field in which the horse was cast was suitable for the purpose. He believed the operation was properly performed and it was proper to leave it in the field. A horse might not be able to rise for an hour and it would not have been wise for Mr. Leeney to have slaughtered the animal at once. He had known horses perfectly healthy which would lay down and groan. Groaning was not altogether an indication of pain. Cross-examined: He had seen many horses unable to use their fore or hind part of the body when recovering from chloroform. Defendant could have ascertained if there was any injury to the spine by pricking an hour after the operation, but not infallibly. Witness thought it doubtful whether defendant could have ascertained immediately after the operation whether the spine was injured, but if he did he ought to have had the animal killed. William Hunting, F.R.C.V.S., said it would be impossible for the defendant to have ascertained whether the spine was injured when the animal was under the influence of chloroform. Mr. Leeney would have been a very rash man to have at once killed the horse. He did not believe the pricking of the tail was a reliable method of ascertaining whether the back was broken, and they were warned against such an elementary practice in one of the standard works on surgery. Any horse mechanically unable to rise would groan, whether from infliction of pain or not. It was extremely difficult to ascertain immediately if a horse's spine was injured. John Roalfe Cox, F.R.C.V.S., said he agreed with the evidence of Mr. Hunting that the field was suitable for the operation. He did not know that anything could have been done for the comfort of the horse. Cross-examined: Defendant could not have determined the extent of the injury when the horse was struggling. The horse being wide awake, he should consider groaning an indication of pain. George Fleming, F.R.C.V.S., said he did not think Mr. Leeney could have diagnosed the injuries when

the animal was recovering from the effects of chloroform. It was proper to leave the animal in the field, as it wanted plenty of fresh air. Cross-examined: Defendant would have been wrong in destroying the animal without properly satisfying himself that the spine was injured. This concluded the case, and the Chairman stated that the Bench were unable to legally convict the defendant. He would, therefore, be given the benefit of the doubt, and the case dismissed. Mr. Cripps asked for costs, but the Bench only allowed the solicitor's fee.

Army Veterinary Department.

Gazette, August 26th.

Veterinary Surgeon, First Class, Charles Clayton to be Inspecting Veterinary Surgeon (ranking as Lieutenant Colonel), *vice* G. Evans, M.D., retired. Dated 7th August.

Charles Beresford Maule Harris, Gent., to be Veterinary Surgeon (ranking as Lieutenant), *vice* P. W. Dundon, deceased. Dated 27th August.

Gazette, September 9th.

Veterinary Surgeon John Cooper, F.R.C.V.S., to be Veterinary Surgeon, First Class (ranking as Captain). Dated September 11th.

Ernest Wilkinson, Gent., to be Veterinary Surgeon (ranking as Lieutenant) in succession to Veterinary Surgeon, First Class, C. Clayton, promoted. Dated September 10th.

Gazette, September 23rd.

Veterinary Surgeon on Probation F. C. Stratton, to be Veterinary Surgeon (ranking as Lieutenant).

Veterinary Surgeon, First Class, Berne has gone from England to South Africa, where he will be senior Veterinary Surgeon. Veterinary Surgeon, First Class, D. C. Pallin has embarked with the 16th Lancers for a tour of service in India. Veterinary Surgeon Drage has returned to India from sick leave.

Obituary.

Mr. Leonard Burghope, M.R.C.V.S., died at Penang, Straits Settlements, on August 17th, aged 28 years. He graduated in 1884.

The death is reported from Melbourne of Mr. Alfred Sharp, M.R.C.V.S., who graduated in 1868, and after practising for several years near Birmingham, "about ten or eleven years ago," says the *Australasian Veterinary Journal*, "Mr. Sharp emigrated to New Zealand, and was in practice in the Waikato district, in the North Island, for some four or five years. Owing to failing health, he left New Zealand, and entered the Stock Department in New South Wales as relieving inspector, where he remained for twelve months. Having regained his health, he came to Melbourne, and commenced a successful practice in one of the populous suburbs. About eighteen months ago Mr. Sharp received a bad kick from a horse, and had his jaw fractured; and about three or four months ago he had the misfortune to be thrown out of a buggy which collided with another vehicle, and received internal injuries. Subsequently to this he had a severe attack of Influenza, from which he never thoroughly recovered, although he was able to get about to do his work up till within a fortnight of his death. Mr. Sharp was a member of the

Veterinary Board, and took an active interest in all professional matters. It was chiefly through his instrumentality that the agitation was revived for obtaining the Veterinary Surgeons Act when he first arrived in Melbourne. Mr. Sharp was also appointed an examiner in horse pathology and veterinary practice, so that his untimely death causes a vacancy both on the Veterinary Board and Board of Examiners.

The deaths are also announced of J. A. Polding, M.R.C.V.S., Bury, who graduated in 1864; H. Noakes, M.R.C.V.S., Brenchley, a graduate of 1860; and C. F. Hogben, M.R.C.V.S., Dover, a graduate of 1873.

Dr. Schmidt-Mülheim, a very distinguished veterinary surgeon, who had written a Manual of the Physiology of the Domestic Animals and a work on Meat Inspection, and was editor of the *Archiv fur Animalische Nahrungsmittelkunde*, died on July 23rd at Wiesbaden.

Notes and News.

TRANSATLANTIC CATTLE TRAFFIC.—Attention has often been called to the abominable cruelty of the Transatlantic cattle traffic as at present carried on, and we are glad to see that Mr. Plimsoll has made a thorough investigation of the subject, and has published the results in a pamphlet entitled "Cattle Ships," through Messrs. Kegan Paul and Co. With the help of his brother in New York and the *Press*, a journal published in that city, Mr. Plimsoll has obtained full details and photographs showing how the cattle ships are loaded; and no one who sees these illustrations will have any difficulty in accounting for the heavy losses among cattle, and the considerable number of wrecks, for which the system is responsible. The wretched beasts are packed like sardines, partly that they may hold each other up, and partly because the cargo is bulky in proportion to weight, and does not pay unless the ship is overloaded. Therefore, the animals are compelled to stand during the whole voyage, and this, in itself, means prolonged suffering. But if one lies down, the result is commonly death from trampling or smothering, and constant torture is inflicted by the attendants to keep the cattle on their legs. In the case of a storm this is impossible, and every cattle ship which encounters rough weather is a place of agony, mutilation, and death. In a storm the hatches are necessarily closed, and this involves the stifling of numbers of the cattle, besides which the pitching of the vessel throws many of them down, and in the frightful struggling that ensues horns are torn off, legs and backs broken, and entrails stamped out. Yet, however dreadfully animals are mutilated, they are not slaughtered, as they must be left to die a "natural death," in order to secure the insurance money. When a storm lasts for some days, the carcases of the dead cattle become putrid before they can be taken out of the ship. Mr. Plimsoll gives instances of losses, such as that of the *Iowa*, which lost a whole cargo of 450 cattle last winter, and narrowly escaped foundering; that of the *Erin*, which sailed from New York on December 28th, with 527 cattle, and was lost with all hands; and several such losses as 150 or 200 out of a thousand, while one vessel landed only 14 out of 360, another no more than 16 out of 276, and a third but 33 out of 680. By deck-loading and the necessary structures for the cattle, a ship is made pretty well unmanageable in a storm, and it is said that a sailor seldom ships more than once in a cattle vessel. The deck structures, with all the cattle, and sometimes some men in them, are often swept overboard in a gale, and this is the best thing that can happen for the safety of the ship. With his usual directness, Mr. Plimsoll proposes the complete prohibition of the Transatlantic traffic in live cattle for food, and has inserted a clause to that effect in a Bill which he has introduced. He

might have proposed that the animals should only be carried under such conditions of safety as are observed when valuable breeding cattle are shipped; but this would be equivalent to prohibition, as it would not pay to transport beef cattle under such circumstances. Having investigated the conditions of the foreign meat trade, Mr. Plimsoll has come to the conclusion that the importation of live cattle from great distances is unnecessary. We get plenty of American beef in carcase form, and this is better than the meat of tortured beasts slaughtered on landing. He finds that the chief reason why the live cattle traffic is preferred by those engaged in it is that the meat of American cattle slaughtered here is commonly sold as English or Scotch, and, therefore, at higher prices than that which comes in carcase form.—*Standard.*

Horse-Cleaning by Machinery.—To the farmer boy who has never seen a horse cleaned except by hand, with the good old currycomb and brush, it would be quite a sight (says the *Boston Journal of Commerce*) to visit some of the large city barns of the car or express companies or large livery establishments, and see the horses cleaned, so to speak. Should he visit the Palmer house livery stables, Chicago, remarks a contemporary in that city, he might see any day a horse undergoing his toilet—in stable parlance, "gettin' cleaned and curried." In exactly forty seconds the animal is turned over to his keeper, as bright as a new pin—not a speck of dirt nor a turned hair to be seen on his sleek, shiny coat. In two hours' time no less than 150 horses, big and little, receive their daily clean-up, and are made ready to prance into society. This revolution in the art of horse cleaning, rubbing down, and currying, all in one, is caused by a simple contrivance, a movable shaft, at one end of which is a circular brush composed of fairly stiff bristles. The brush, which is run by steam, revolves many hundred times a minute, and is guided by the cleaner. Two cleaners, operating with the brushes on one animal at the same time, can accomplish more in a minute than can four men with the old brush and currycomb in twenty minutes. As soon as the brush touches the body of the horse the dirt and dead hair fly in all directions, and it needs only a second "going over" to have the animal so clean that a glove would not be soiled in rubbing over the hide. At first, the horse appears frightened at the noise of the revolving shafts, but as soon as he feels the touch of the brush he edges up closer to the cleaner and gives every indication of pleasure. The harder the pressure on the brush the harder will be the rubbing, of course, and when the sensation becomes uncomfortable the horses move away. In this way the cleaners are easily informed how hard a rubbing the animal will stand.

Experimental Infection with Milk from Tuberculous Cows.—Dr. Karl Hirschberger has made, at the request of Dr. Bollinger, a series of experiments in the Pathological Institute at Munich on the inoculation of animals with milk from cows in various stages of Tuberculosis. He attempts to answer the following questions:—1. Do tuberculous cows frequently give infectious milk, or is their milk only exceptionally infectious? 2. In which forms of Tuberculosis is the milk infectious—in localised or only in general Tuberculosis? He made twenty experiments, and calls attention to the fact that inoculation alone can give decisive results, because it is very difficult to observe tubercle bacilli microscopically in the milk, and impossible to discover their spores. On the strength of his experiments he states that the danger of infection from the milk of tuberculous cows does not only exist, but is very great, being found in 55 per cent. of all cases examined. The more the Tuberculosis has spread the greater is this danger; but even in mild cases of localised Tuberculosis the milk is, he considers, more or less infectious.

THE INCREASE OF ANIMAL LIFE.—Compared with the rest of animal nature, infusory animalcules are undoubtedly the most numerous; next come worms, insects, and fishes. After these are the amphibia and serpents, birds and quadrupeds, and lastly, man. The human female produces generally but one offspring at a time, and that after a considerable interval from her birth, and but few during her whole existence. Many quadrupeds are subject to similar laws, while others are more prolific, their fecundity being little, if at all, inferior to that of certain birds, for they will produce twenty or thirty young at a time. Several birds breed frequently in a year, and will lay more than a single egg at a time. How prodigious (says the *Scientific American*) is the difference on descending to the classes Pisces, Amphibia, Reptilia, Insecta, and Annelida! Yet among them the numbers cannot be more different. According to naturalists, a scorpion will produce 65 young; a common fly will lay 144 eggs; a leech, 150; and a spider, 170. A hydrachna produces 600 eggs; and a frog, 1,100. A female moth will produce 1,100 eggs; and a tortoise, 1,000. A gall insect has laid 50,000 eggs; a shrimp, 60,000; and 10,000 have been found in the ovary of an acarus. One naturalist found over 12,000 eggs in a lobster, and another over 21,000. An insect very similar to an ant (*Mutilla*) has produced 80,000 eggs in a single day; and Leuwenhoeck seems to compute 4,000,000 to the crab's share. Many fishes produce an incredible number of eggs. More than 36,000 have been counted in a herring, 31,000 in a smelt, 1,000,000 in a sole, 1,300,000 in a roach, 3,000,000 in a sturgeon, 342,000 in a carp, 383,000 in a tench, 546,000 in a mackerel, 992,000 in a perch, and 1,357,000 in a flounder. But of all the fishes hitherto discovered, the cod seems to be the most prolific. One naturalist computes that this fish produces more than 3,686,000 eggs, and another as many as 9,444,000. A rough calculation has shown that were 1 per cent. of the eggs of the salmon to result in full-grown-fish, and were they and their progeny to continue to increase in the same ratio, they would, in about sixty years, amount in bulk to many times the size of the earth. Nor is the salmon the most prolific of species. In a yellow perch, weighing three and a half ounces, have been counted 9 943 eggs, and in a smelt ten inches and a half in length 25,141. An interesting experiment was made in 1761 by Charles F. Lund. He obtained from 50 female breams 3,100,000 young; from 100 female perch, 3,215,000; from 100 female mullets, 4,000,000.

CAPSICUM AS A COUNTER-IRRITANT.—Dr. Henry J. Buck, writing to the *Lancet*, says:—"I have used this drug for more than twenty years, I may almost say daily, and many of my patients will not travel without a bottle of the "magic lotion," as they call it. I find the simplest and most efficacious way of applying it is to soak a large handful of the crushed pods in half a pint of hot water for an hour, then strain, and bottle for use. A teaspoonful of eau-de-Cologne added will help to keep the solution, or it can be well boiled after preparing. I then have it applied to the affected parts on a piece of linen, folded three or four times, or on lint, and covered with gutta-percha tissue or a dry-flannel. In this way the lotion may be kept on for hours, without vesicating, and in many cases the skin is hardly reddened. The stinging and burning sensation produced by the capsicum lotion is, after a few minutes, welcomed by the sufferer, so magically does it often remove the rheumatic or neuralgic pain for which it has been applied."

THE PASTEUR TREATMENT OF HYDROPHOBIA.—The Pasteur treatment of Hydrophobia has been virtually attacked, because it has not always been successful; but this is something which has never been claimed for vaccination for any form of disease. It is estimated that from fifteen to twenty persons out of every hundred bitten by mad dogs or cats develop Hydrophobia; but in 2,164 persons treated at the Pasteur Institute to January, 1887, there was a

mortality of only 1.4 per cent., while in 1887 the mortality was reduced to 1.3 per cent., and in 1818 to 1.16 per cent.

UNITED STATES OF AMERICA.—We notice that our colleague, Robert Ward, F.R.C.V.S., has resumed his position as the State Veterinarian of Maryland, *vice* W. H. Wray, D.V.S., resigned, he having been appointed one of the Inspectors to reside in England, being stationed at Deptford abattoirs. We congratulate Dr. Ward, and could never understand how it came about that he was ever removed from the position at all.

GOÎTRE IN ANIMALS.—In the Brazils this malady has been seen in the lower animals. Caldcleugh (*Travels in South America*, Vol. ii., p. 258) saw goitred goats at Villa Rica; and Walsh (*Notices of Brazil* in 1828 and 1829, Vol. ii., p. 63) declares that it affects not only mankind but also cattle, and that cows are frequently seen with it. Burton (*The Highlands of Brazil*, Vol. i., p. 395) owned a dog that had an incipient goître, and he had heard of its appearing in poultry. Some people attribute it to the water, but it is more generally ascribed to the absence of salt.

TRICHINOSIS.—In a recent communication to the Académie de Medicine of Paris, M. Laboulène stated that trichinæ are easily detected in meat; the smallest section made in the direction of the fibres reveals the presence of cysticerci. The muscles of the head and neck, and the intercostal muscles are the most easily examined.

THE PREDETERMINATION OF THE SEX OF OFFSPRING.—Herr G. Herz, in a contribution to the German archives of scientific and practical veterinary surgery on the possibility of predetermining the sex, gives an elaborate review of the numerous theories of the sexual differentiation, from which it appears that we are still entirely ignorant of the cause of such difference. He enlarges on the theory of Fiquet, which is also favoured by his own experiments. Mr. Fiquet, a cattle farmer at Houston in Texas, had observed that the sex of the young was usually that of the weaker parent. He produced for experimental purposes a marked parental difference by a certain system of keeping and feeding his cattle. . It he wanted a bull calf he gave the cow plenty of particular nourishing fodder, while the bull was given far less fodder, and that of inferior quality, and was made to serve the largest possible number of cows. If, on the contrary, he wanted to produce heifers, he fed the bull well and allowed him no chance of serving other cows but those on which he wanted to experiment, and which were kept on poor fodder. Mr. Fiquet says that he was successful in thirty-two cases, and Herr Herz verified the theory by experiments of his own on goats, which gave the same results as Mr. Fiquet's experiments on cattle.

THE MILK OF THE EGYPTIAN BUFFALO.—According to the researches of Messrs. Pappel and Richmond, of the Khedivial Laboratory, Cairo, the milk of the Egyptian buffalo or gamoose, *Bos bubalus*, presents several characteristics distinguishing it from that of the cow, which may well be remembered by medical men who have to treat patients, especially infants, in Egypt or in other countries where this animal is common. The amount of fat was found to be a good deal larger than in cow's milk, the percentage in the specimens examined varying from 5·15 to 7 35. The sugar, which appeared to be a hitherto undescribed variety differing from milk sugar, was also found to be of larger amount than that in cow's milk, the average percentage being 5·41. It is suggested that this sugar should be called *tewfikose*. The fat, too, was found to differ from that of cow's milk, containing minute quantities of sulphur and phosphorus, and yielding four times as much caproic acid, whereas in cow's milk the quantity of caproic acid is only double that of butyric acid. The milk was found to contain a small quantity of citric acid.

THE INSPECTION OF MEAT IN BERLIN.—The official inspection of cattle, meat, and meat markets in Berlin is now so comprehensive and careful that the guarantee of good meat may almost be said to have reached the limits of possibility. According to a report of the official veterinary surgon, Dr. Hertwig, 18 veterinary surgeons, 6 assistant veterinary surgeons, 8 superintendents in the trichinæ department, 184 meat inspectors, 48 sample-takers, 16 stampers, a secretary and two bookkeepers, a foreman, and a large number of male and female workers, are employed in the municipal slaughter-house alone. Among the meat inspectors there are 92 women—*i.e.*, half of the number. Fifteen veterinary surgeons, 53 inspectors, 22 sample-takers, 8 stampers, 2 control-revisers, and 8 control watchers belong to the stations where the meat is examined. The living animals in the stalls of the slaughter-house are examined several times a day, so that the condition of their health is ascertained in almost every case immediately before they are killed. Regarding the ruminants that are slaughtered, a very careful journal containing all details of significance is kept in the office. In the trichinæ department 184 meat inspectors are employed, in six sections, and 48 sample-takers in four. If trichinæ are found in a pig, all the pigs from which the sample-taker has taken samples at the same time are at once treated as objects of suspicion, and continue to be so treated until it has been ascertained beyond doubt that the mistaking of one pig for another is out of the question. Pigs with trichinæ are at once stamped with a large red stamp as *trichinenhaltig—i.e.*, containing trichinæ—whereas the healthy animals are stamped blue. For the inspection of fresh meat not killed in the slaughter-house eight stations have been at work since 1887, situated near the places where the meat arrives or at the market halls. Each station is superintended by a principal veterinary surgeon, who is assisted by other veterinary surgeons, meat inspectors, and sample-takers. Special officials are employed to control and observe the meat traffic, especially at night, in places of call where butchers from other places are wont to live, in the market halls at the time when the butchers drive up, etc. Unexamined meat found in shops and other places of sale is seized and sent to the knacker's yard for destruction, and the sellers are prosecuted.

ACTINOMYCOSIS IN THE UNITED STATES.—The Chicago correspondent of the *Butchers' Advocate*, a paper published at New York, telegraphs the following: Some experiments have just been concluded at Flanagan's slaughter-house, at Fortieth and Wallace Streets, that will be of the greatest importance to the packing industry and to veterinarians, many of whom have hitherto held that Actinomycosis, or "lumpy-jaw," was not a contagious disease and that the meat of cattle afflicted by it was not injurious. Members of the live stock boards of several States superintended the killing of a number of cattle afflicted with "lumpy-jaw" and examined the bodies. A week ago fifty-five were killed, and on Tuesday thirty-four more. The object was to ascertain to what extent the disease affected the entire system so as to make the meat of such cattle unfit for food. The result of the examination was that in about 90 per cent. of the cases investigated, the disease was observed to have affected the internal organs and the flesh. The examination was conducted in the presence and under the supervision of C. P. Johnson, secretary of the Illinois Live Stock Board; Dr. H. McChesney, one of the commissioners; State Veterinarians, Dr. John Casewell, of Illinois; Dr. E. A. A. Grange, of Michigan; Dr. Paul Paquin, of Missouri; Dr. M. E. Knowles, of Indiana; and Dr. V. T. Atkinson, of Wisconsin; Dr. T. L. Armstrong, Inspector of the United States' Bureau of Animal Industry; Profs. A. H. Baker and Joseph Hughes, of the Chicago Veterinary College; Dr. W. L. Williams, of Bloomington; Dr. John Scott, of Peoria; Dr. B. B.

Page, of Rockford. Drs. Paquin and Grange, expert microscopists, took a number of specimens for microscopical examination and for experiments in inoculation. They expect to corroborate what has been asserted by German and French scientists—that "lumpy jaw" is a contagious disease.

A BOYLE CORRESPONDENT says that Rabies has attacked the Boyle Harriers, and several of the dogs have been shot.

RAPID TROTTING.—A horse named Roy Wilkes trotted a mile in 2min. 8½sec., at Independence, Iowa, on the 30th ult., thus beating the world's record.

THE SPONTANEOUS COMBUSTION OF HAY.—After a series of very careful experiments, Professor Cohn, of Breslau, has found (*La Petite Revue* says) that the heating of damp hay to a temperature sufficient to cause the spontaneous combustion of it is due to a fungus. He first studied the heat-generating action of *Aspergillus fumigatus*, which has the bad reputation of heating barley in the course of germination and of rendering it sterile. Through the effect of the respiration of the little germ—that is to say, through the combustion of the starch and other hydrocarburets which the diastasic ferment converts into maltose and dextrine, the temperature is raised by about 40 deg. The heating of the germs to more than 60 deg. occurs only through the intervention of the *Aspergillus*, which acts as a ferment. Under these conditions it reaches its greatest development and produces its maximum action. In this state it rapidly burns the hydrocarburets.

Correspondence.

THE VETERINARY DEFENCE SOCIETY AS A "SETTLING" SOCIETY.

SIR,—The above sneer has been cast at our Society by some, who say that *on principle we should defend every case*, meet every case in the Court, and fight it out. In my paper on Murdock's case, I showed the exceedingly unsatisfactory result of fighting a case in which you had not a leg to stand upon. The advocates of this heroic system are for the most part non-members of our society, who have never been members, and never taken the slightest interest in it. They know as much of its internal working and the difficulties we have to contend with as the man living in Timbuctoo; but their minds seem to take a pleasure in fomenting discontent and annoyance. Now, we have had considerable experience in these kinds of cases, and we have found, to our cost, the uncertainty of the law. It is said experience is a dear school, but fools will learn in no other. Now we have learned our lesson, and the knowledge we possess satisfies us that when our Council have carefully examined a case in its various phases, and are of opinion that there are many doubtful or weak points in it—that where we have nothing but uncertainty, and very probably complete failure staring us in the face, it is far better to settle it amongst ourselves amicably, than to leave it to be settled by magistrates, a judge, or a jury, after it has been wrangled over by solicitors, or counsel and judge, neither of which probably possesses any sound horse knowledge—such a settlement always entailing great cost and bitter estrangement.

I could give many instances in which cases have been defended, and which have resulted in lamentable failure and loss—loss of credit, loss of customer, and loss of money; cases in which members of our Society have been hauled up for damages—before and since Murdock's case—because they gave an honest opinion in an examination. But I will leave this heroic fighting method of settlement to those who take a pleasure in fighting, and will give a few

instances to show that, since the power was given to us, we have conducted our cases to a successful, amicable, and honourable settlement.

No. 1. In Liverpool, in 1876, a veterinary surgeon was sued for laming a horse in shoeing, and neglect; damages laid at £45. It went on for trial; we had all our forces in battle array—counsel, solicitor, a number of witnesses, and veterinary surgeons; the other side the same; a whole day was spent in Court, but it did not come on for hearing. In coming down the stairs from the Court, our President (Mr. Taylor), who was by my side, said in a loud tone of voice, so that the plaintiff, who was close to, could hear him, "*Whoever wins it will lose a lot of brass.*" After this we were introduced to the plaintiff, and in a very short time, by straightforward, respectful, business-like arguments, the plaintiff meeting us in a kindly, gentlemanly manner, we came to an amicable settlement in full of all demands for about one-third of the original claim. Claimant and defendant shook hands.

No. 2. In Birmingham, in 1885, a veterinary surgeon was sued for injury to a horse. The horse was cast for firing its hocks without the owner's knowledge or consent; being an old horse, he broke his back in his struggles. The claim was for £50; all the paraphernalia of law was set to work, and it was going on for trial; our Council felt it to be a very unsatisfactory and doubtful case, and, foreseeing no probability of a favourable issue, decided to send a deputation to see the horse, the defendant, and the plaintiff. We were told that the plaintiff was a most unreasonable, intractable man, that he would very likely refuse to see us, or would insult us, and order us out of his office. We introduced ourselves in a straightforward, respectful, and business-like manner, he received us courteously and gentlemanly; after a while we ventured to show him the weak points in his case; he came down one-half at one stroke, and after about two hours' temperate and firm argument, we settled it with him for £6 10s. in full of all demands.

No. 3. In London, in 1884, a veterinary surgeon was sued for £50 for injury to a horse; a writ was served, it was going on for trial. Our Council, seeing the weakness of our case, determined to try and avoid a trial, since we could only see one result—failure. We were told the plaintiff was a foreigner, a doctor, very eccentric and passionate; that he would not see us; if he did he would be sure to insult us and to turn us out. We introduced ourselves to him in a straightforward, respectful, and business-like manner; he received us in a courteous and gentlemanly manner—treatment we meet with in every case. He said, "Now, I can listen to you gentlemen; but the defendant set me at defiance. He set his back against the wall, and told me he would never pay me one sixpence towards my loss." After about one hour's firm and temperate argument, he settled his claim in full of all demands for £7.

No. 4. In 1886 a veterinary surgeon of Liverpool was sued for laming a valuable horse in his forge, and neglecting her afterwards. The Council carefully considered the case, and decided it would not be wise to defend it, since it looked weak and very doubtful in several points. We advised that an attempt should be made to settle it out of Court; this the defendant strongly objected to. On principle, he said, it should be fought and defended; he suggested that the Society should allow him £10, and that he would fight it out himself, so confident was he that he could get a verdict in his favour. This application was consented to by the Committee; the trial went on, he lost it, costing him three times the amount. He applied for a new trial, but his application was refused. So much for taking our cases to a higher Court, as recommended by Professor Pritchard.

No. 5. In Liverpool, in 1866, a veterinary surgeon of Preston was sued for £35, the value of a mare examined by defendant's assistant, and bought on the faith of his opinion; a writ was issued. The opinion of our Council was that the case looked very doubtful, and they determined that a deputation

should see the horse, the defendant, his assistant, the seller, and also the plaintiff. Our President and myself went to Preston, saw defendant and his assistant, and called twice to see the seller, but were unable to meet him. We then went to Liverpool and saw the plaintiff, who received us very courteously; he took us twelve miles to see the mare, and back. Plaintiff showed us he purchased the mare to breed from, and to do a little work, and that he had requested the person who had examined her to be very particular as to her fore feet and wind. Well, we found this mare very lame on both fore feet—a permanent lameness; she was aged, was 17 hands high, had a Roman nose, and was the rankest roarer you ever heard. We considered it would be worse than madness to allow this case to go into Court, principle or no principle. We argued the point with moderation and firmness, and in the end he settled it in an amicable and honourable manner for £10 in full of all demands. I would ask, Do not justice and equity both demand that reparation should be made in such cases? Our President and myself travelled over 100 miles, and spent the whole day at our own cost; and, as we returned to our homes, we consoled ourselves that we had saved the reputation of the profession by avoiding the exposure and disgrace; more than that, we had saved our Society *more than ten times that amount of its funds.* Now, I ask, Is there a man with a calm and sensible mind, not tainted by prejudice, and with any generous instinct in his nature, who will sneer at us and twit us as being "A Settling Society," when he sees plainly the great advantage of acting as we have done? My motto is—"Be just and fear not."

THOMAS GREAVES, F.R.C.V.S.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Rutherford, Edinburgh; T. H. Merrick, Northampton; J. G. Rutherford, Manitoba; T. Greaves, Manchester; R. Ward, Baltimore, U.S.A.; W. Ashton Hancock, Newcastle-on-Tyne; R. S. Barcham, Paston; G. A. Banham, Cambridge; P. Pike, Manchester; J. Mills, A.V.D., Chatham; J. Cooke, Scarborough; J. Anderson, A.V.D., Newmarket; Dr. Paquin, Columbia, U.S.A.; Captain Russell, Grantham; Messrs. Arnold and Sons, London; Professor Smith, A.V.D., Aldershot; A. W. Hill, London.

BOOKS AND PAMPHLETS: *Dr. W. Dieckerhoff*, Geschichte der Rinderpest und ihrer Literatur; *Drs. Boschetti and Bassi*, Trattato di Ostetrica Veterinaria di Giorjio Fleming (10 dispensa); Compte Rendu des Séances du Ve Congrès International de Médecine Veterinaire; *Dr. R. Schmalz*, Topograpische Anatomie der Korperhöhlen des Rindes; Procès-Verbal de la Academie Royal de Méd. de Belgique; *L. Hoffmann*, Die Sattle und Geschirrdrücke und deren Heilung; Syllabus of the Melbourne Veterinary College; Annual Announcement of the School of Veterinary Science, Baltimore University; *Dr. Paquin*, Black Leg; Bulletin de l'Academie de Médecine.

JOURNALS, ETC.: *Naval and Military Argus; Live Stock Journal; County Gentleman; Quarterly Journal of Veterinary Science in India; Echo Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; Moderno Zooiatro; Revue Vèterinaire; American Veterinary Review; Journal of Comparative Medicine and Veterinary Archives; Annales de Médecine Vétérinaire; Deutsche Zeitschrift für Thiermeaicin und Vergleichende Pathologie; Lancet; Australasian Veterinary and Live Stock Journal; Repertorium der Thierheilkunde; Journal of the Royal Agricultural Society of Victoria; British Medical Journal; Indian Medical Gazette; Edinburgh Medical Journal; Mark Lane Express; Medical Press and Circular; Medical Recorder; Journal of the Society of Arts.*

NEWSPAPERS: *Edinburgh Evening Dispatch; Freeman's Journal; Daily Telegraph; Glasgow Herald.*